ADVANCING INTEGRATED HEALTHCARE

Welcome
Asthma Planning Meeting

Care Transformation Collaborative of Rhode Island

February 11, 2021

Agenda

Topic *Presenter(s)*	Duration
Welcome, Review of Agenda *Ashley Fogarty, MPH, Asthma Program Manager, RIDOH*	5 minutes
Asthma Updates: Pediatrics *Daniella Teape, MD*	15 minutes
Asthma Updates: Adults *Andrew Foderaro, MD*	15 minutes
Asthma Performance data Gayle Dichter, VP Integrated Care Strategies, NHPRI	15 minutes
Next Steps & Meeting *Susanne Campbell, RN, MS, PCMH CCE, CTC-RI Senior Project Director*	10 minutes

“Quick Relief: Updates for your Pediatric Asthma management toolbelt”

Daniella Teape, MD

Assistant Professor of Pediatrics

Pediatric Pulmonologist

Co- medical director of Hasbro Severe asthma program

February 11th, 2022

Hasbro Children’s Hospital
The Pediatric Division of Rhode Island Hospital
A Lifespan Partner

IN DEO SPERAMUS

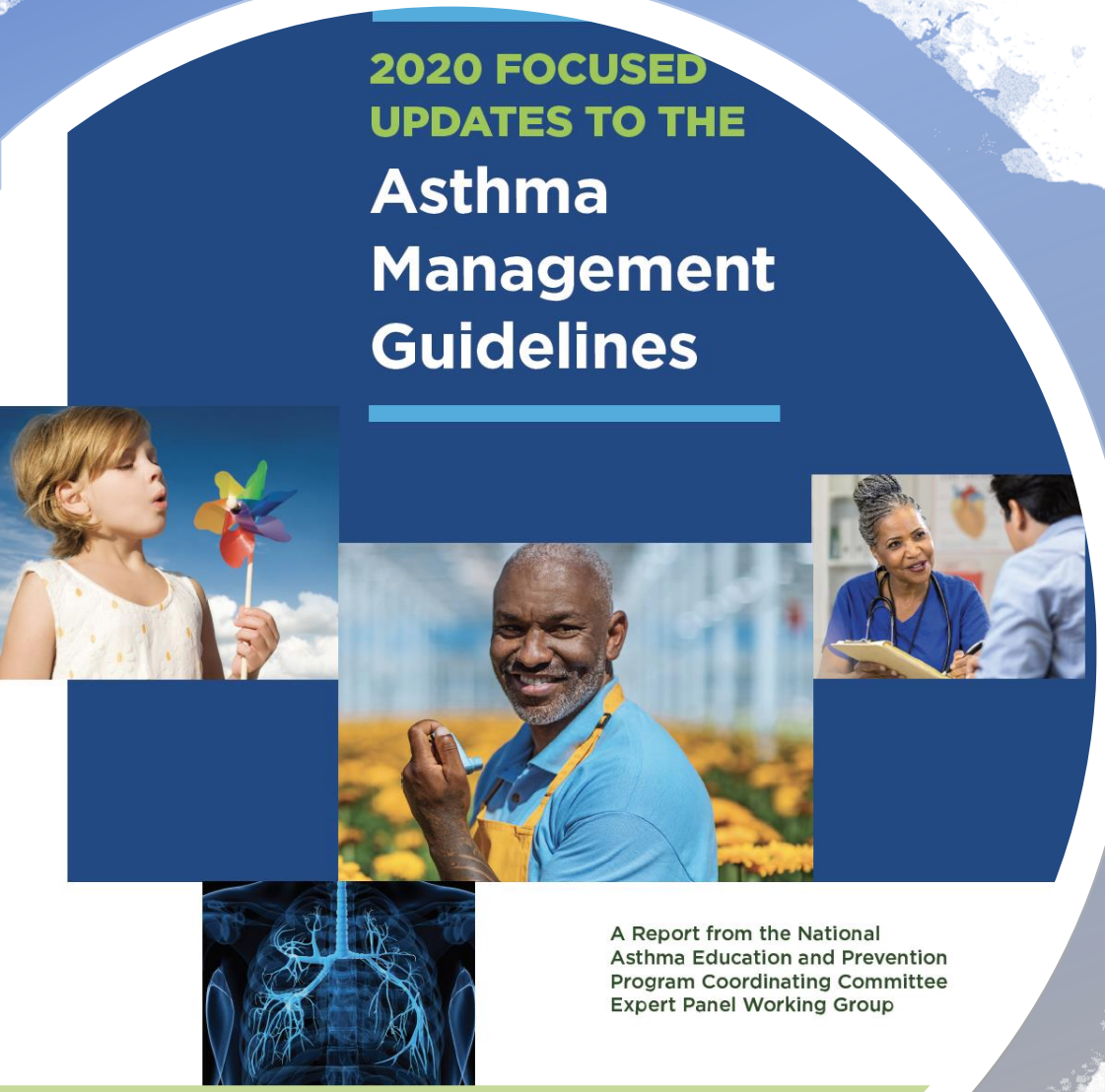
No conflicts of interest

Objectives

- Discuss key changes to asthma management in children
- Examine updated stepwise approach for management of asthma

Objectives

- Discuss key changes to asthma management in children
- Examine updated stepwise approach for management of asthma



- Clinical guidelines for the diagnosis and management of asthma
- Guidelines published 1991, followed by revisions in 1997, 2002, 2007, and 2020
- 2020 focused on asthma management

The six priority topics

- Utility of fractional exhaled nitric oxide (FeNO)
- Importance of remediation of indoor allergens
- Intermittent use of inhaled corticosteroid for treatment of asthma
- Benefits of long-acting antimuscarinic agents (LAMA) add-ons to inhaled corticosteroids
- Immunotherapy and the management of asthma
- Bronchial thermoplasty in adult severe asthma

Priority topics :

- Utility of fractional exhaled nitric oxide (FeNO)
- Importance of remediation of indoor allergens
- Intermittent use of inhaled corticosteroid for treatment of asthma
- Benefits of Long-acting antimuscarinic agents (LAMA) add-ons to inhaled corticosteroids

Priority topics :

- Utility of fractional exhaled nitric oxide (FeNO)

Fractional exhaled Nitric Oxide (FeNO)

- Measure the level of nitric oxide (NO) on exhalation
- Indicator of type 2 or eosinophilic inflammation in the airway
- Single breath technique with constant expiratory flow
- Primary or subspecialty clinic

Asthma and allergy foundation of America. July 2017

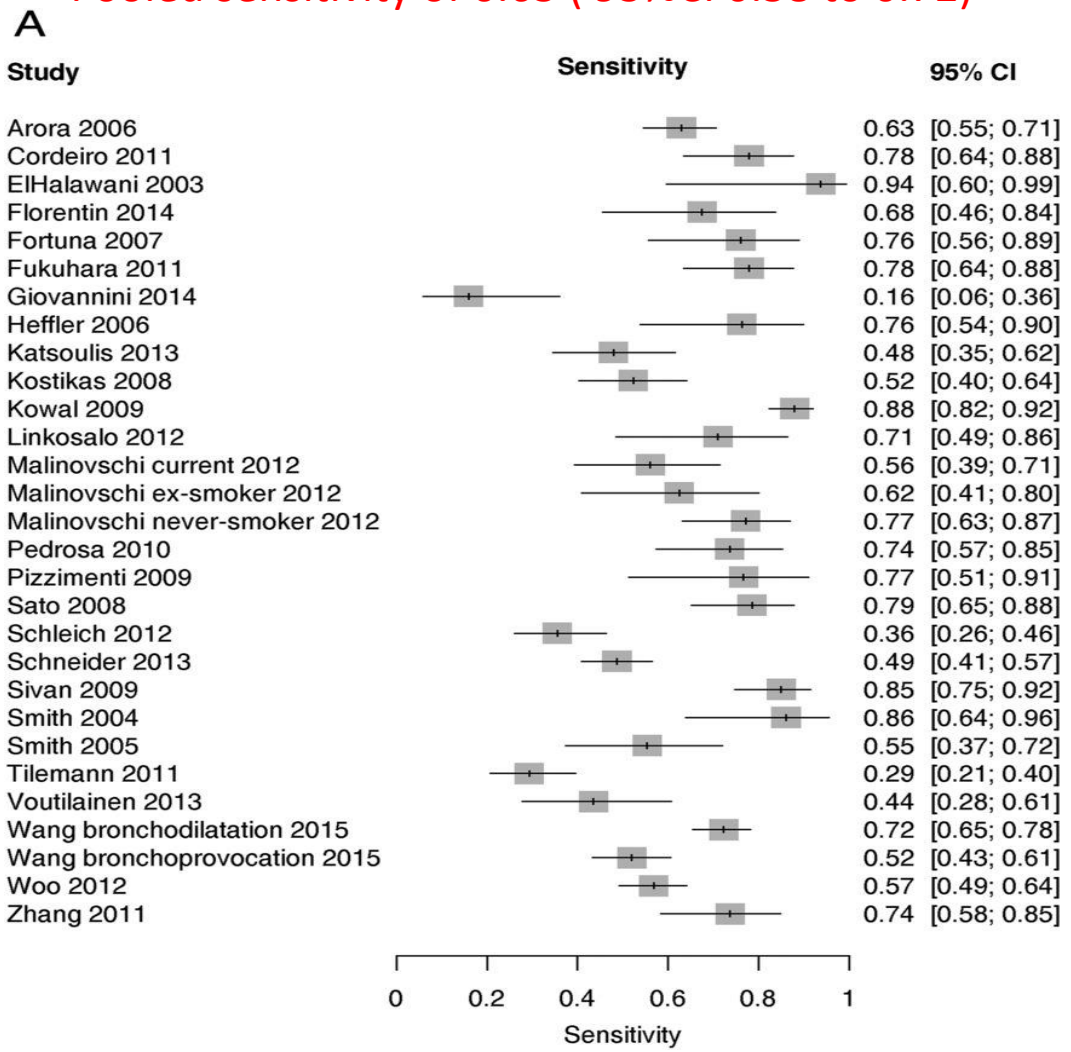
Table II: Interpretations of FeNO Test Results for Asthma Diagnosis in Nonsmoking Individuals Not Taking Corticosteroids*

FeNO Level		
<25 ppb Low **(<20 in children ages 5–12)**	**25–50 ppb** Intermediate **(20–35 in children ages 5–12)**	**>50 ppb** Very high **(>35 in children ages 5–12)**
▪ Recent or current corticosteroid use ▪ Alternative diagnoses ▪ Phenotype less likely to benefit from ICS ▪ Noneosinophilic asthma ▪ COPD ▪ Bronchiectasis ▪ CF ▪ Vocal cord dysfunction	▪ Evaluate in clinical context ▪ Consider other diagnoses ▪ Consider other factors influencing result ▪ Eosinophilic asthma less likely	▪ Eosinophilic airways inflammation likely ▪ Phenotype more likely to respond to ICS ▪ Allergic asthma ▪ Eosinophilic bronchitis Supports diagnosis of allergic asthma

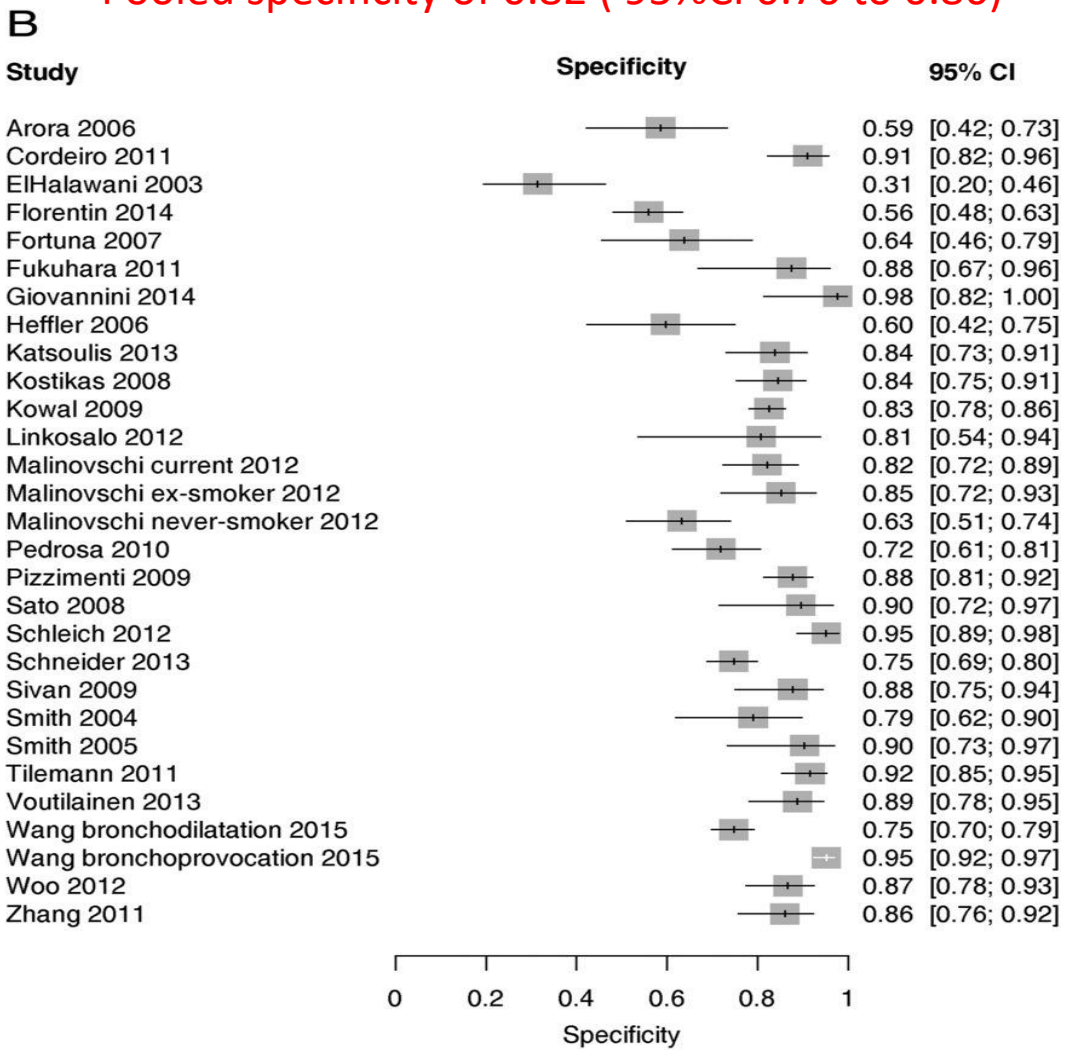
Reproduced from ATS clinical guidelines. 2011

FeNo measurement most useful for ruling in asthma

Pooled sensitivity of 0.65 (95%CI 0.58 to 0.72)



Pooled specificity of 0.82 (95%CI 0.76 to 0.86)



Stefan Karrasch et al. Thorax 2017;72:109-116

Utilize FeNO adjunctively in the evaluation process for diagnosing asthma

- In children 5 years or older with uncertain asthma diagnosis
- Not recommended in children 4 years or younger due to inconclusive diagnostic accuracy

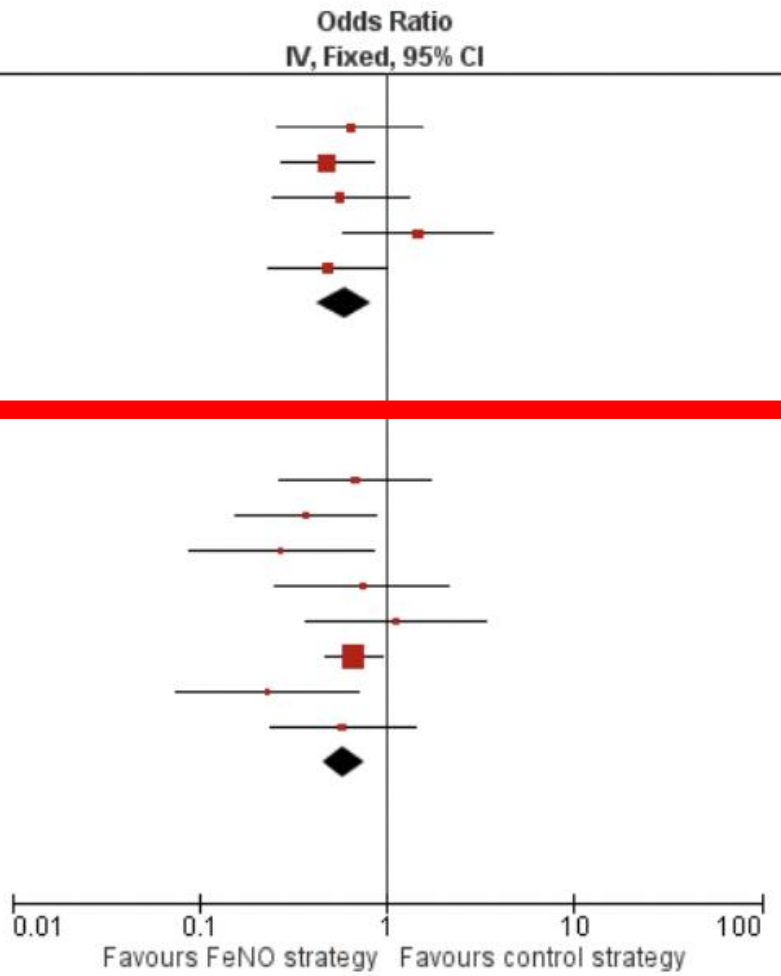
Karrasch et al. 2017

Utilize FeNO adjunctively monitor of anti-inflammatory therapies

- 5 years and older with persistent allergic asthma.
  - Uncertainty in selecting, monitoring or adjusting anti-inflammatory therapies

FeNO reduces risk of acute asthma exacerbation

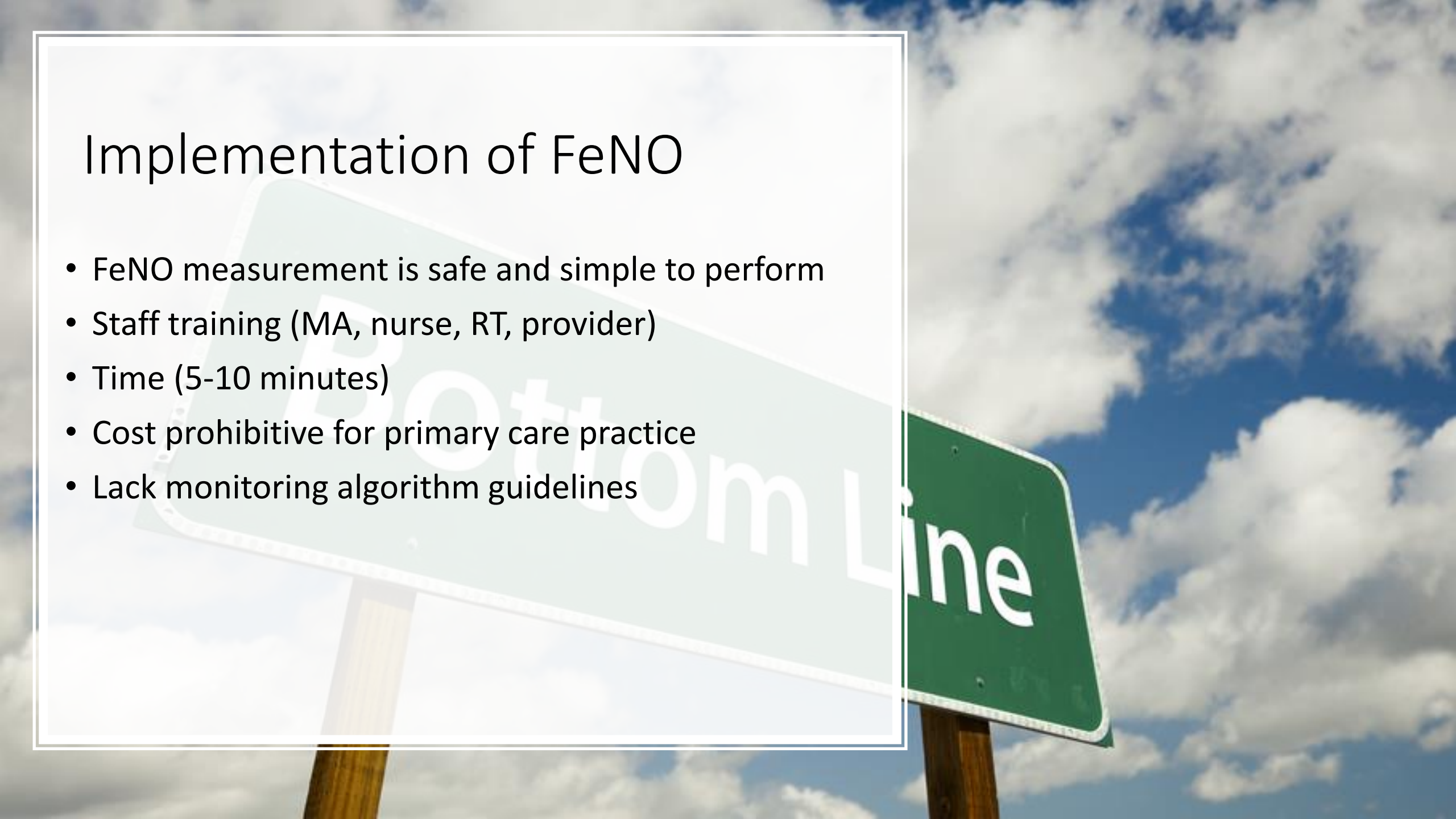
Study or Subgroup	log[Odds Ratio]	SE	FeNO strategy Total	Control strategy Total	Weight	Odds Ratio IV, Fixed, 95% CI
1.1.1 Adults						
Honkoop 2014	-0.4463	0.4546	189	203	14.3%	0.64 [0.26, 1.56]
Powell 2011	-0.7344	0.2926	111	109	34.4%	0.48 [0.27, 0.85]
Shaw 2007	-0.5746	0.4267	58	60	16.2%	0.56 [0.24, 1.30]
Smith 2005	0.3863	0.4697	46	48	13.4%	1.47 [0.59, 3.69]
Syk 2013	-0.7244	0.3679	93	88	21.8%	0.48 [0.24, 1.00]
Subtotal (95% CI)			**497**	**508**	**100.0%**	**0.60 [0.43, 0.84]**
Heterogeneity: Chi² = 4.61, df = 4 (P = 0.33); I² = 13%						
Test for overall effect: Z = 3.00 (P = 0.003)						
1.1.2 Children						
de Jongste 2008	-0.383	0.4757	75	72	7.6%	0.68 [0.27, 1.73]
Peirsman 2014a	-0.9985	0.4454	49	50	8.6%	0.37 [0.15, 0.88]
Petsky 2015	-1.302	0.5763	31	32	5.1%	0.27 [0.09, 0.84]
Pijnenburg 2005a	-0.3011	0.5463	42	47	5.7%	0.74 [0.25, 2.16]
Pike 2013a	0.1069	0.5667	44	46	5.3%	1.11 [0.37, 3.38]
Szefler 2008a	-0.411	0.1776	276	270	54.2%	0.66 [0.47, 0.94]
Verini 2010a	-1.4663	0.5746	32	32	5.2%	0.23 [0.07, 0.71]
Voorend-van Bergen 2015	-0.5432	0.456	92	89	8.2%	0.58 [0.24, 1.42]
Subtotal (95% CI)			**641**	**638**	**100.0%**	**0.58 [0.45, 0.76]**
Heterogeneity: Chi² = 7.54, df = 7 (P = 0.38); I² = 7%						
Test for overall effect: Z = 4.11 (P < 0.0001)						
Test for subgroup differences: Chi² = 0.01, df = 1 (P = 0.92), I² = 0%						



Petsky HL, Cates CJ, Kew KM*, et al*. *Thorax* . 2018

Implementation of FeNO

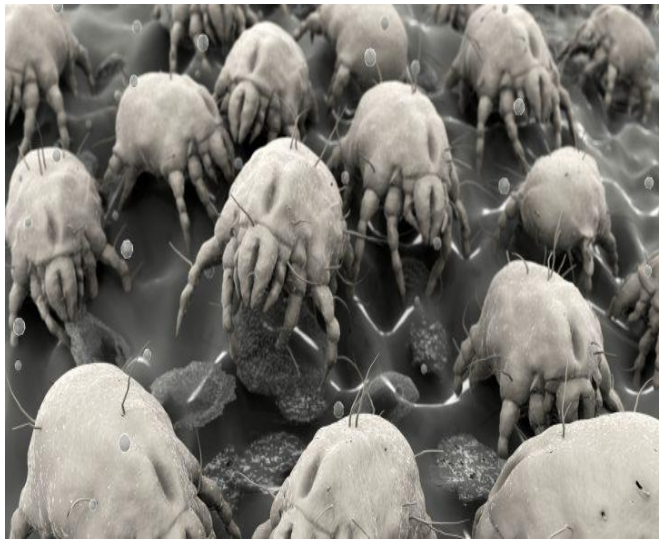
- FeNO measurement is safe and simple to perform
- Staff training (MA, nurse, RT, provider)
- Time (5-10 minutes)
- Cost prohibitive for primary care practice
- Lack monitoring algorithm guidelines

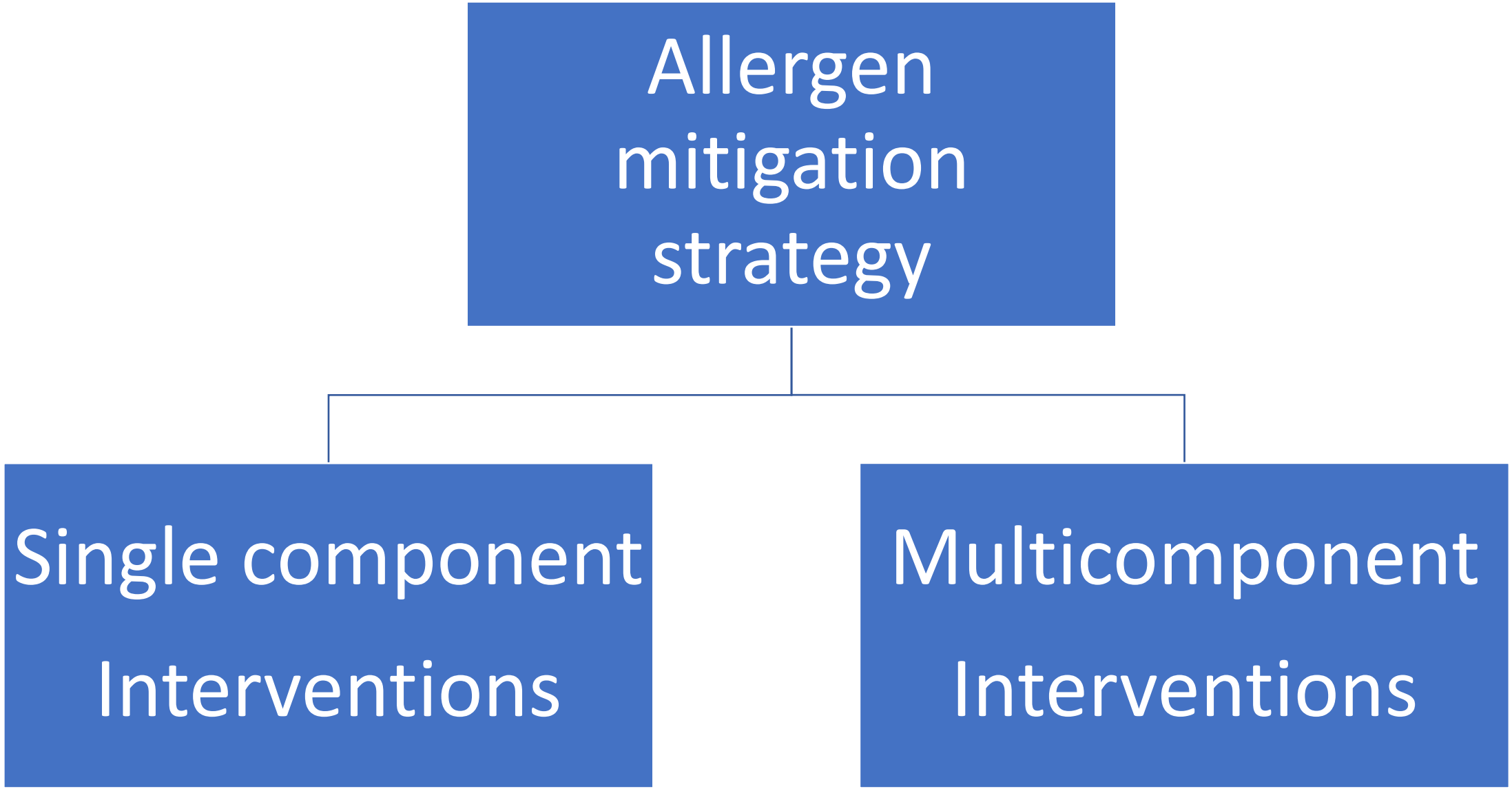


Priority topics :

- Importance of remediation of indoor allergens

Indoor allergens



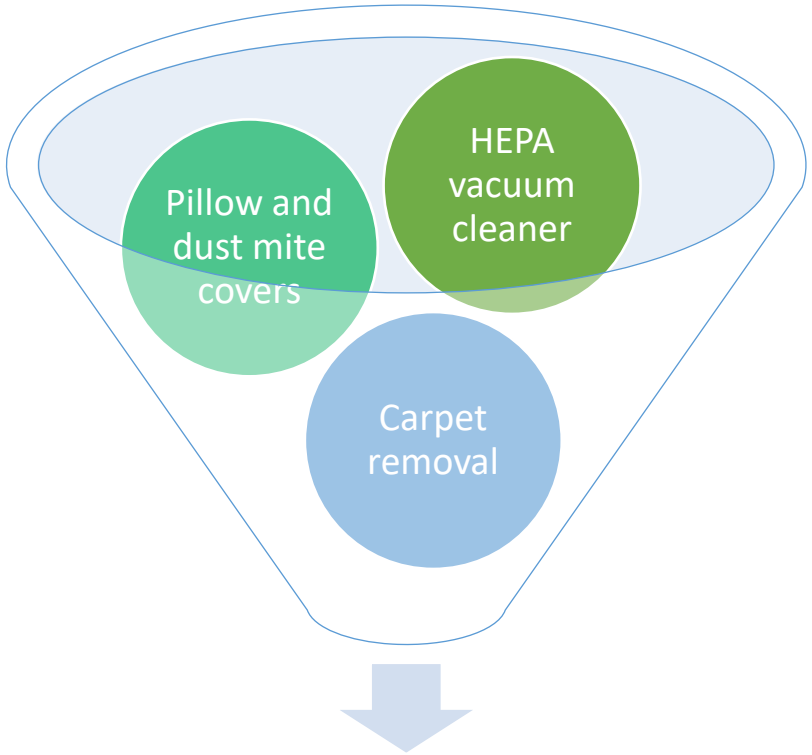

Allergen mitigation strategy
Single component Interventions
Multicomponent Interventions

Allergen mitigation interventions

Single component mitigation strategies

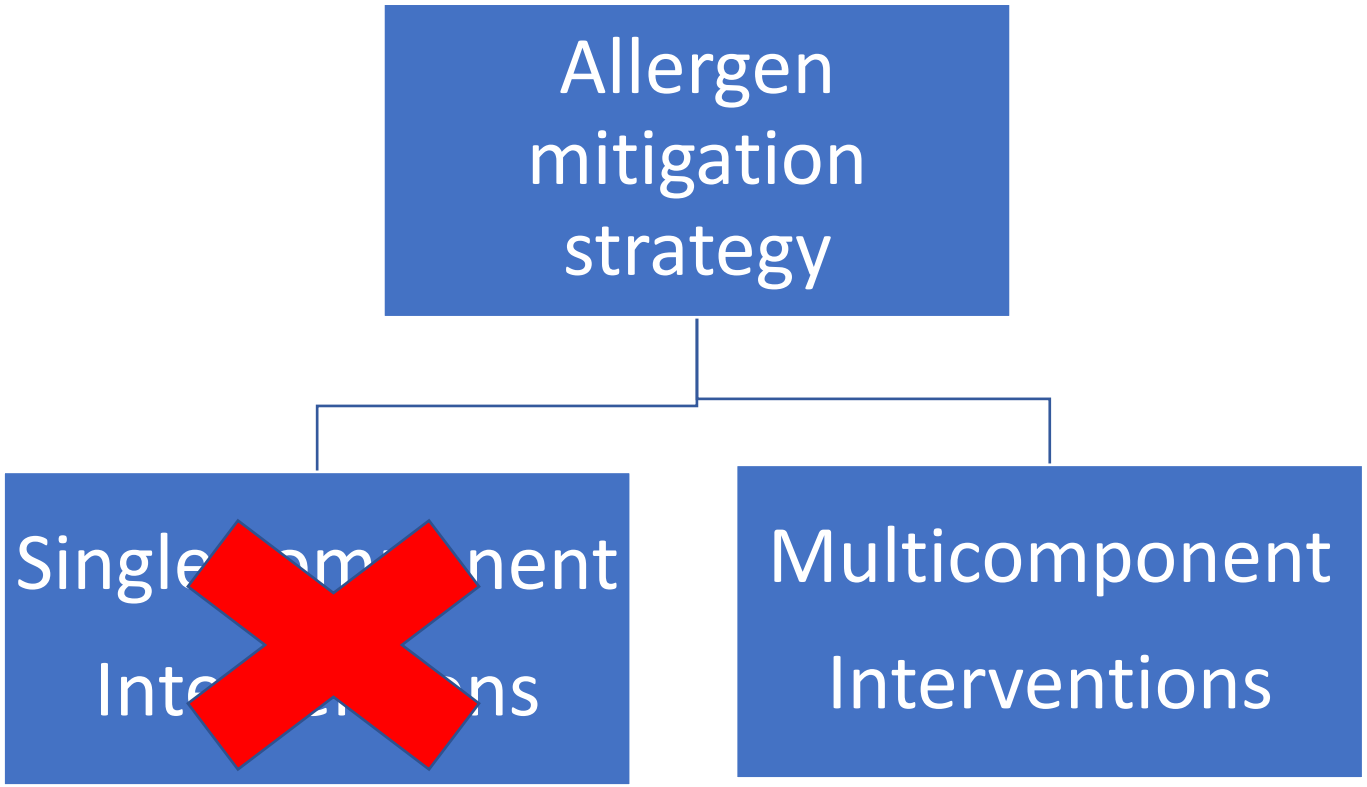
- Pesticides eg. acaricide
- Integrated pest management
- Air purifiers and air filtration systems
- HEPA filter vacuum cleaners
- *Carpet removal*
- *Mold mitigation*
- Impermeable pillow and mattress covers
- Pet removal

Multicomponent intervention



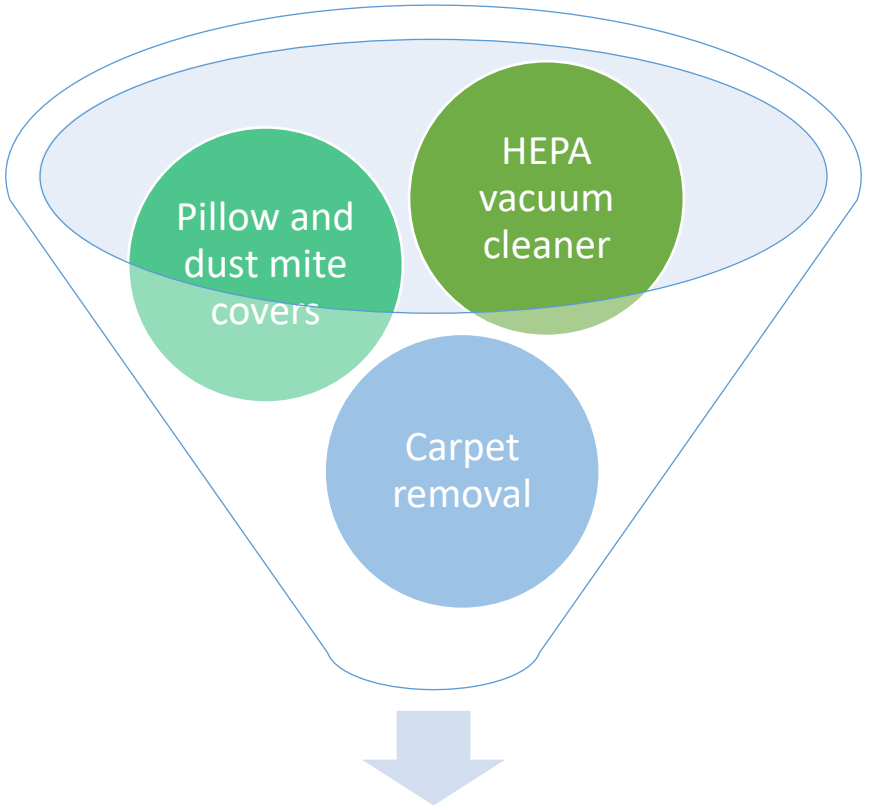
Utilize multicomponent mitigation intervention

- Allergen exposure
- Allergy symptoms confirmed by history or positive allergy testing
- Single –component interventions do not work



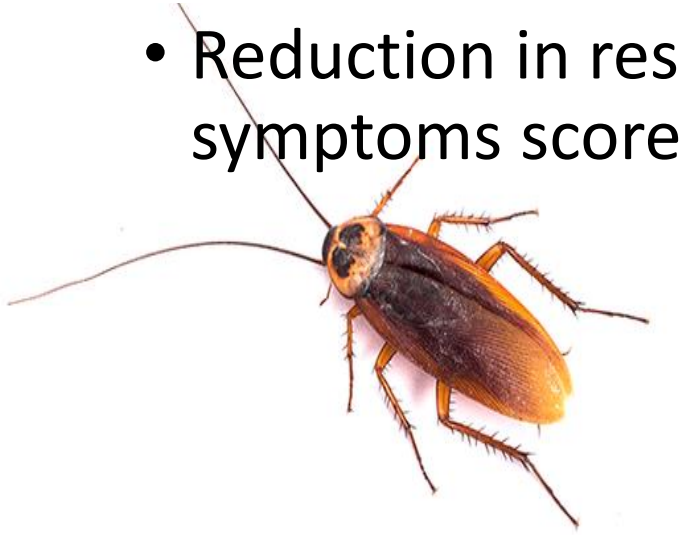
Utilize pillow/mattress covers ONLY as part of multicomponent intervention

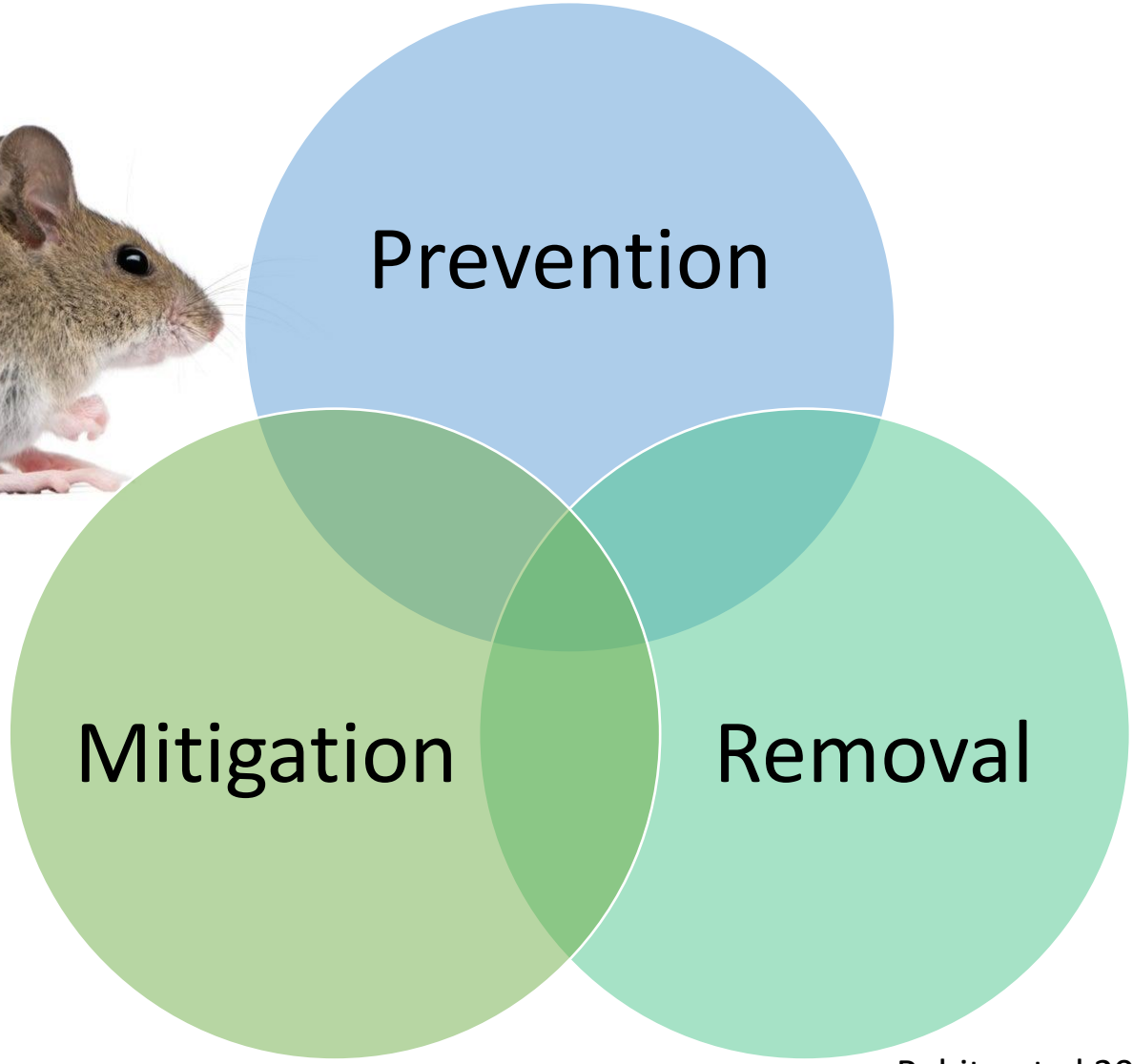
- Reduction in the amount of asthma symptom days



Utilize integrated pest management alone for pest allergy

- Comprehensive approach to removing and controlling common indoor pest
- Reduction in respiratory symptoms score





Rabito et al 2006
Levy et al. 2006

Boston based public housing initiative

Table 2
Demographics of children in intervention study

	Franklin Hill (FH)	West Broadway (WeB)	Washington Beech (WaB)	Total
Number of children	22	21	7	50
Number of households	17	19	5	41
Age at enrollment (%)				
4–5	14	19	14	16
6–9	32	24	29	28
10–12	27	38	29	32
13–17	27	19	29	24
Race/ethnicity (%)				
Hispanic	55	81	86	70
African-American	45	14	14	28
Caucasian	0	5	0	2

Integrated pest management approach

1. Trap placement, sealing of cracks and holes
2. One- time intensive cleaning with HEPA vacuum
3. In home education about pest reduction
4. Replacement of child's mattress

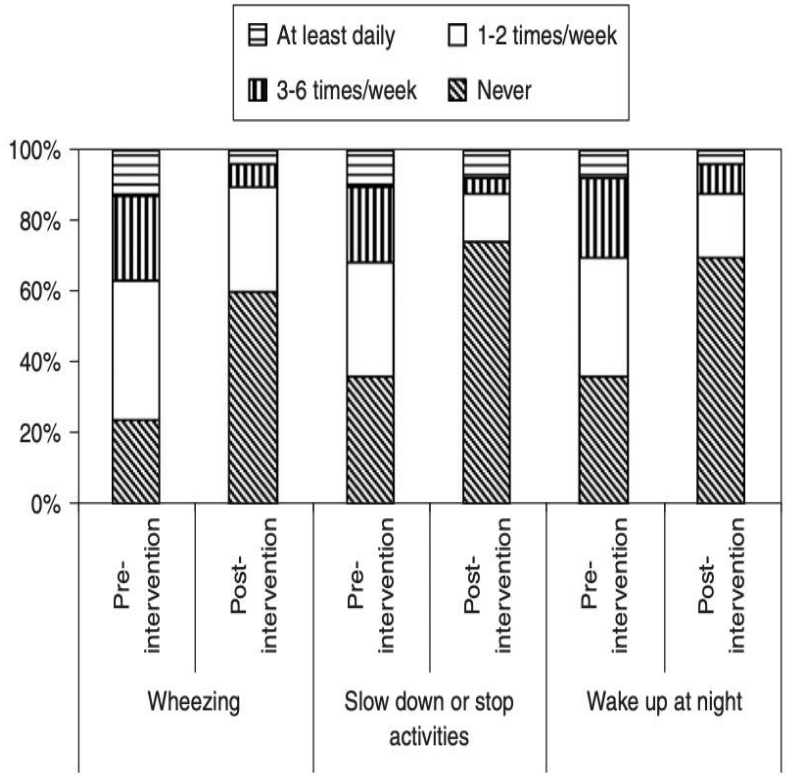
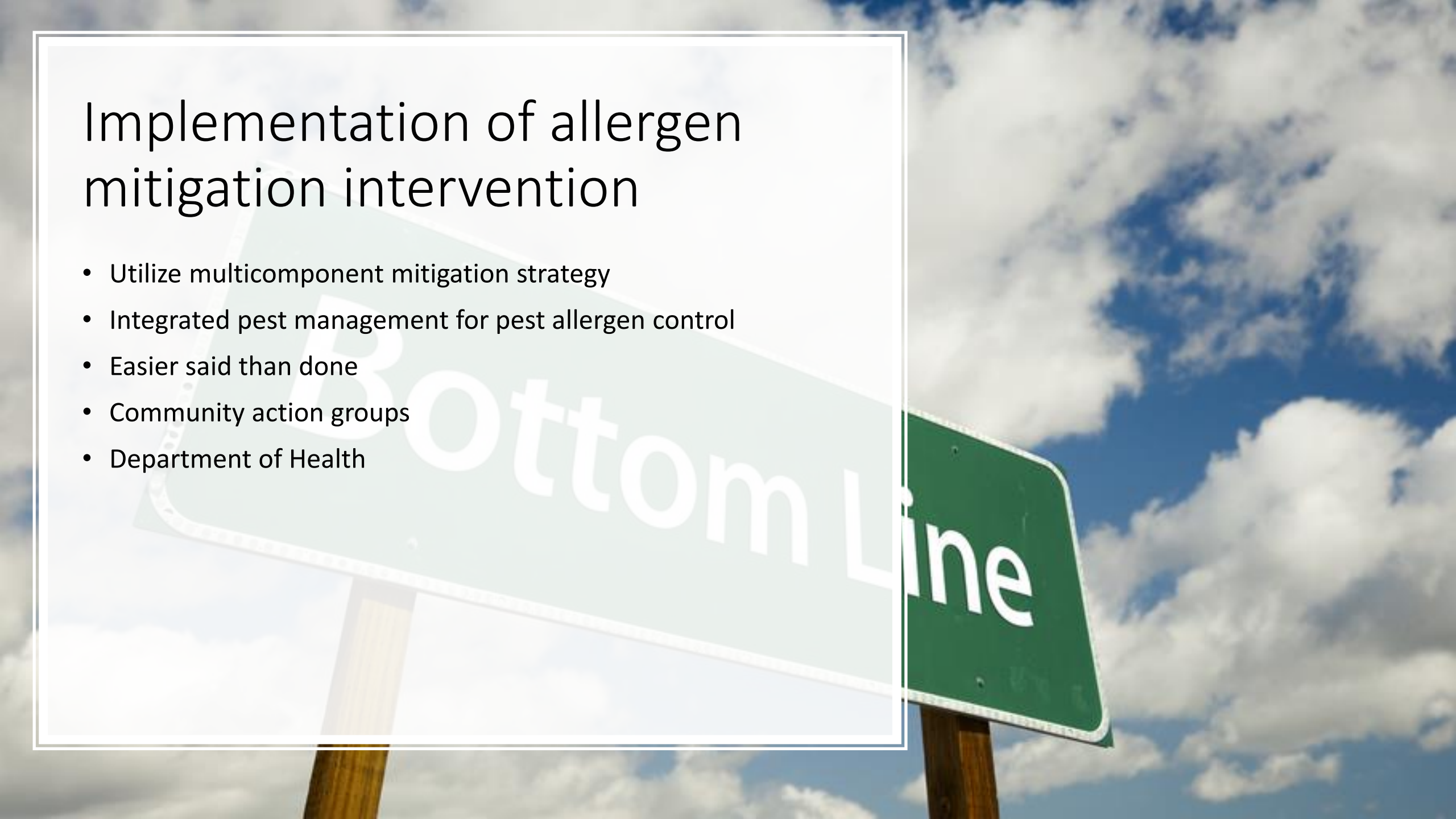


Fig. 1. Respiratory symptoms in the 2 weeks prior to enrollment versus the 2 weeks prior to the end of the study.

Levy et al. 2006

Implementation of allergen mitigation intervention

- Utilize multicomponent mitigation strategy
- Integrated pest management for pest allergen control
- Easier said than done
- Community action groups
- Department of Health



Priority topics :

- Intermittent use of inhaled corticosteroid for treatment of asthma

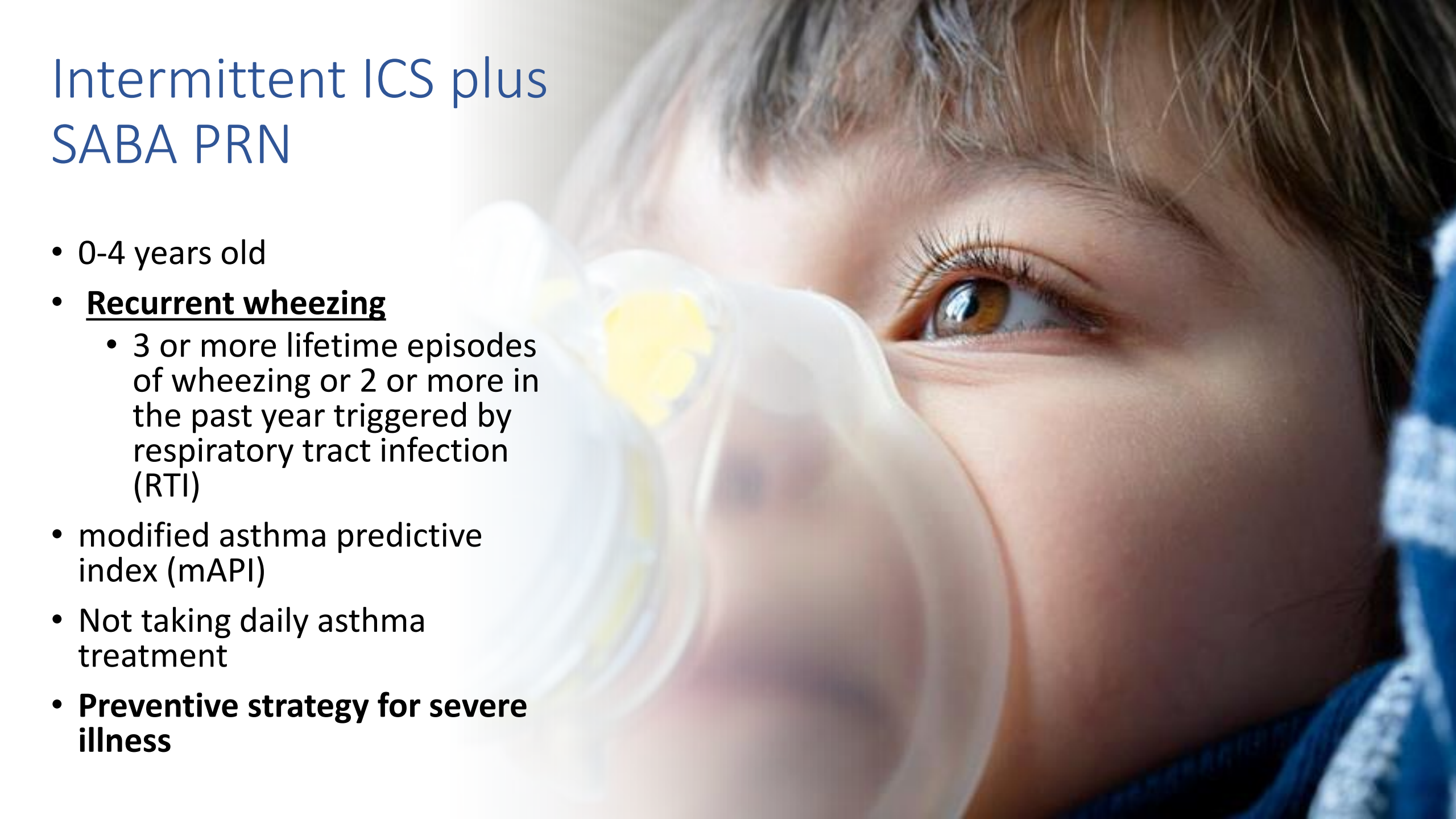
Daily medications → PRN

Short course of inhaled corticosteroid (ICS)daily plus SABA PRN

- For children 0-4 years old & 12 years or older
- At the onset of symptoms of asthma exacerbation
- *5-11 years old evidence insufficient*

Intermittent ICS plus SABA PRN

- 0-4 years old
- **Recurrent wheezing**
  - 3 or more lifetime episodes of wheezing or 2 or more in the past year triggered by respiratory tract infection (RTI)
- modified asthma predictive index (mAPI)
- Not taking daily asthma treatment
- **Preventive strategy for severe illness**

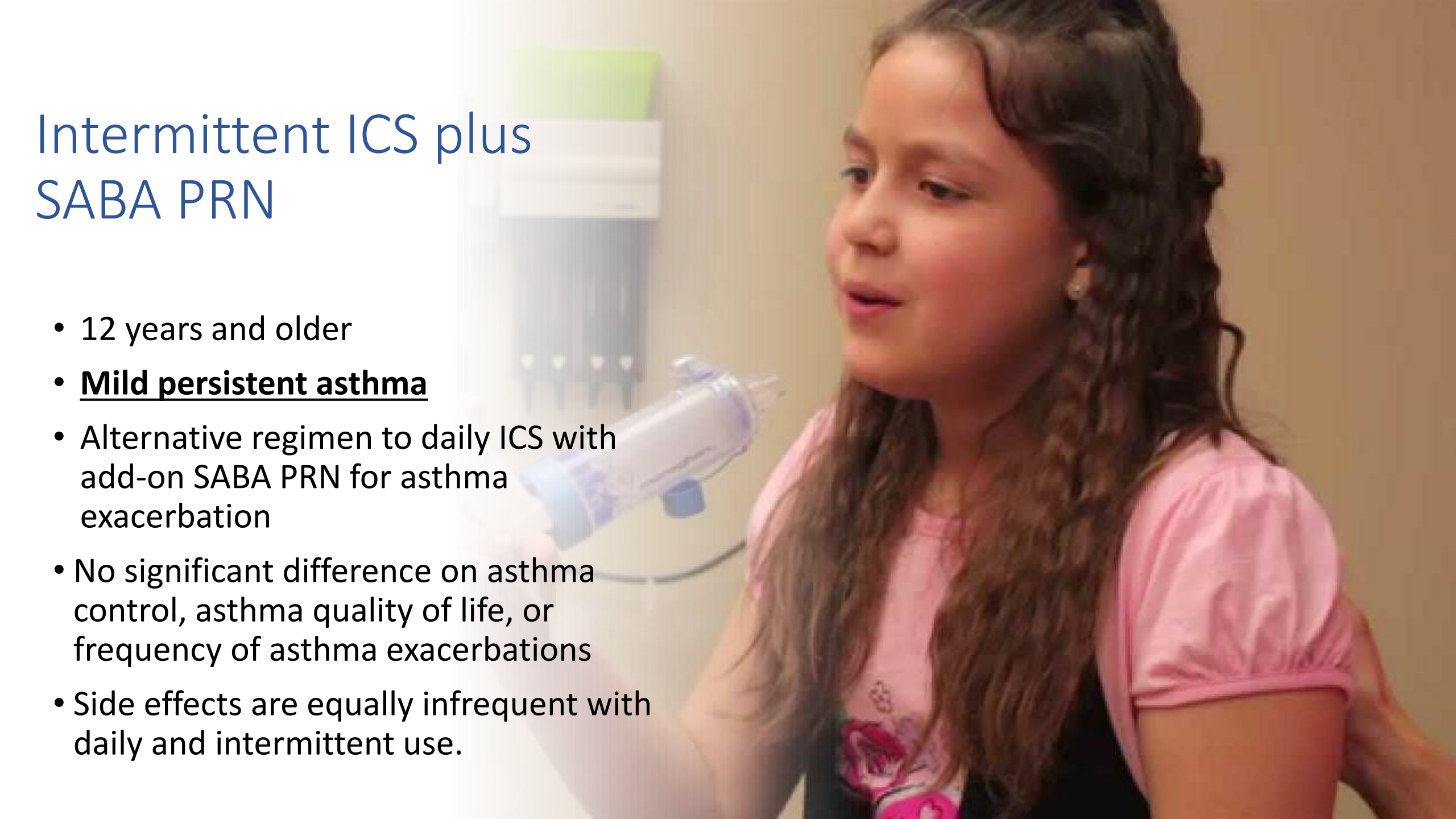


Implementing add-on daily Inhaled corticosteroid to SABA PRN

- Recommended regimens
  - Short course of 7-10 days
  - ICS: budesonide 1 mg twice daily
- Alternative regimen
  - Fluticasone 750 mcg twice daily for 10 days

Ducharme et al. 2009
Bacharier et al 2008
Svedmyr et al 1999
Zeiger et al 2011

Intermittent ICS plus SABA PRN



- 12 years and older
- **Mild persistent asthma**
- Alternative regimen to daily ICS with add-on SABA PRN for asthma exacerbation
- No significant difference on asthma control, asthma quality of life, or frequency of asthma exacerbations
- Side effects are equally infrequent with daily and intermittent use.

Implementing intermittent ICS plus SABA PRN

- **2-4 puffs of albuterol** followed by **80–250 mcg of Beclomethasone** equivalent every 4 hours as needed for asthma symptoms.

Benefits versus risk of intermittent ICS plus SABA

Benefits

- **33 % relative risk (RR) reduction** in exacerbations requiring systemic corticosteroids.
- Patients and/or caregivers can initiate intermittent ICS at hom

Risk

- *5 % lower gain in height and weight one RCT (Ducharme et al 2009).*

Ducharme et al. 2009
Bacharier et al 2008
Svedmyr et al 1999
Zeiger et al 2011

ICS-formoterol in single maintenance and reliever therapy (SMART)

- 4 years old or older
- Uncontrolled moderate to severe persistent asthma
- **ICS-formoterol** in a single inhaler used as both daily controller and reliever therapy
- Step 3 (low-dose ICS) and Step 4 (medium-dose ICS) treatment
- Prefer to step up to high dose ICS
- **Preventive strategy for severe illness**

Implementing single maintenance and reliever therapy (SMART)

- **Formoterol** rapid onset of action
  - Budesonide-formoterol
  - Beclomethasone-formoterol
- ICS-formoterol should not be used as quick-relief therapy in individuals taking ICS-salmeterol as maintenance therapy
- The maximum total daily dose of formoterol
  - **8 puffs (36 mcg) for ages 4–11 years**
  - **12 puffs (54 mcg) for ages 12 years and older.**

Benefits versus risk/drawbacks of SMART

Benefits

- 35-51 % risk reduction in exacerbations
- Lower risk of growth suppression vs. daily high dose LABA –ICS in 4-11 y/o

Risks & Drawbacks

- Formoterol only LABA studied
- Early refill of LABA-ICS

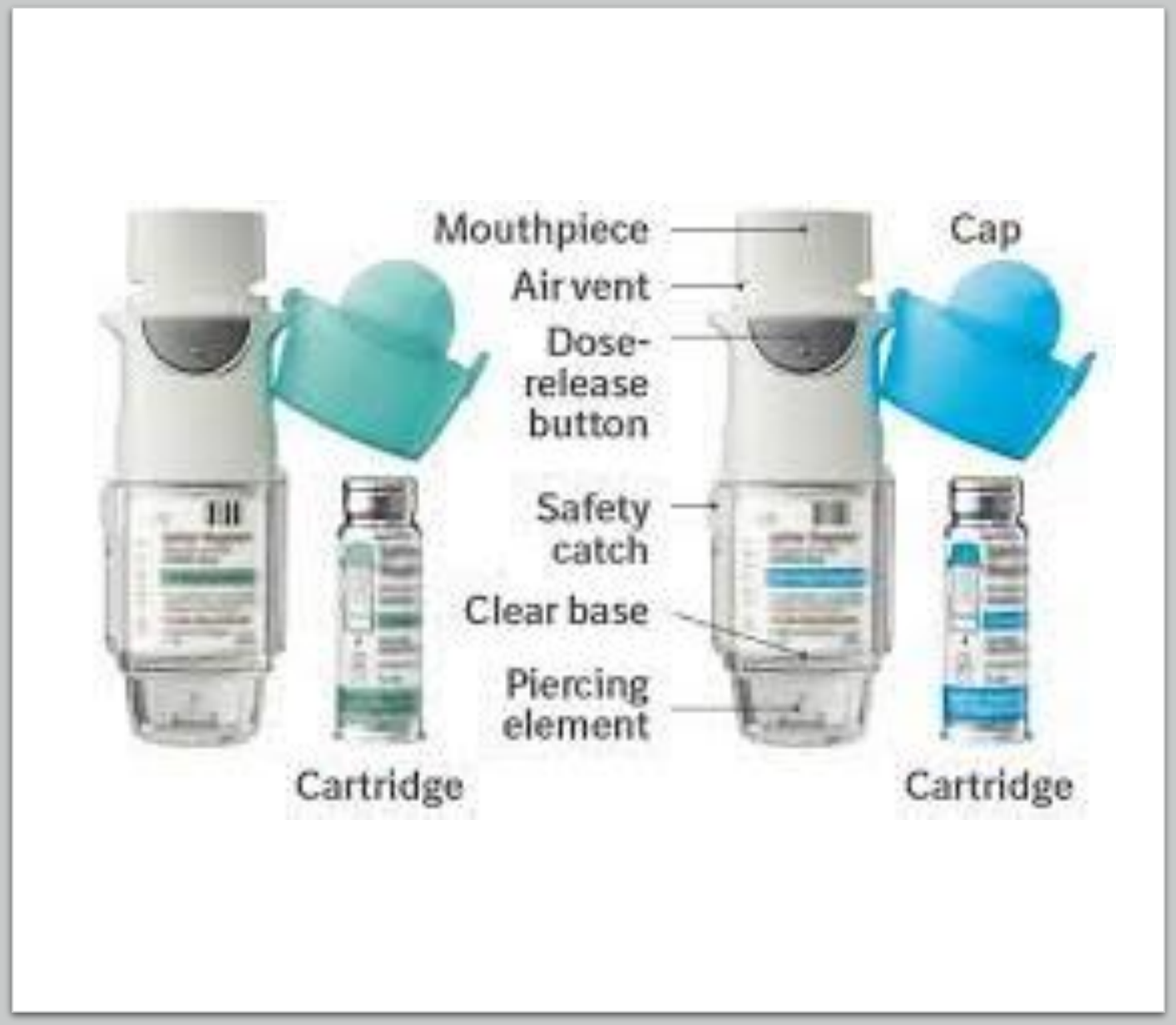
Rabel et al. 2006
Schicchitano et al. 2004
O'Byrne et al 2005

Priority topics :

- Utility of fractional exhaled nitric oxide (FeNO)
- Importance of remediation of indoor allergens
- Intermittent use of inhaled corticosteroid for treatment of asthma
- **Benefits of Long-acting antimuscarinic agents (LAMA) add-ons to inhaled corticosteroids**

Long-acting muscarinic antagonist

- Long- acting bronchodilator
- FDA approved for 6 years old or older (February 2017)
- Adjunctive treatment of uncontrolled moderate to severe persistent asthma
- Breath actuated inhaler



LABA- ICS preferred to LAMA- ICS

- 12 years or older with uncontrolled persistent asthma
- Key questions and systemic review did not address 6–11-year-old
- Step 4 therapy
- No difference in outcomes including rate of asthma exacerbations, asthma control, quality

Benefits versus risk/drawbacks of LAMA- ICS versus ICS-LABA

Benefits

- LABA-ICS *more efficacious* than LAMA-ICS

Risks & Drawbacks

- Individuals at risk of urinary retention and those who have glaucoma should not receive LAMA therapy.
- *Increased risk of harm for Blacks (BELT study)*

Wechsler et al. 2015
Peters et al. 2015
Kerstjens et al 2015

Add-on LAMA to ICS-LABA

- 12 years or older
- Uncontrolled persistent asthma on ICS-LABA
- Mitigate occupational and environmental triggers, assess medication adherence prior to considering addition of LAMA
- Exclude patients with glaucoma or urinary retention

Benefits versus risk/drawbacks of add-on LAMA to LABA-ICS

Benefits

- Small improvement in asthma control (ACQ-7) and quality of life

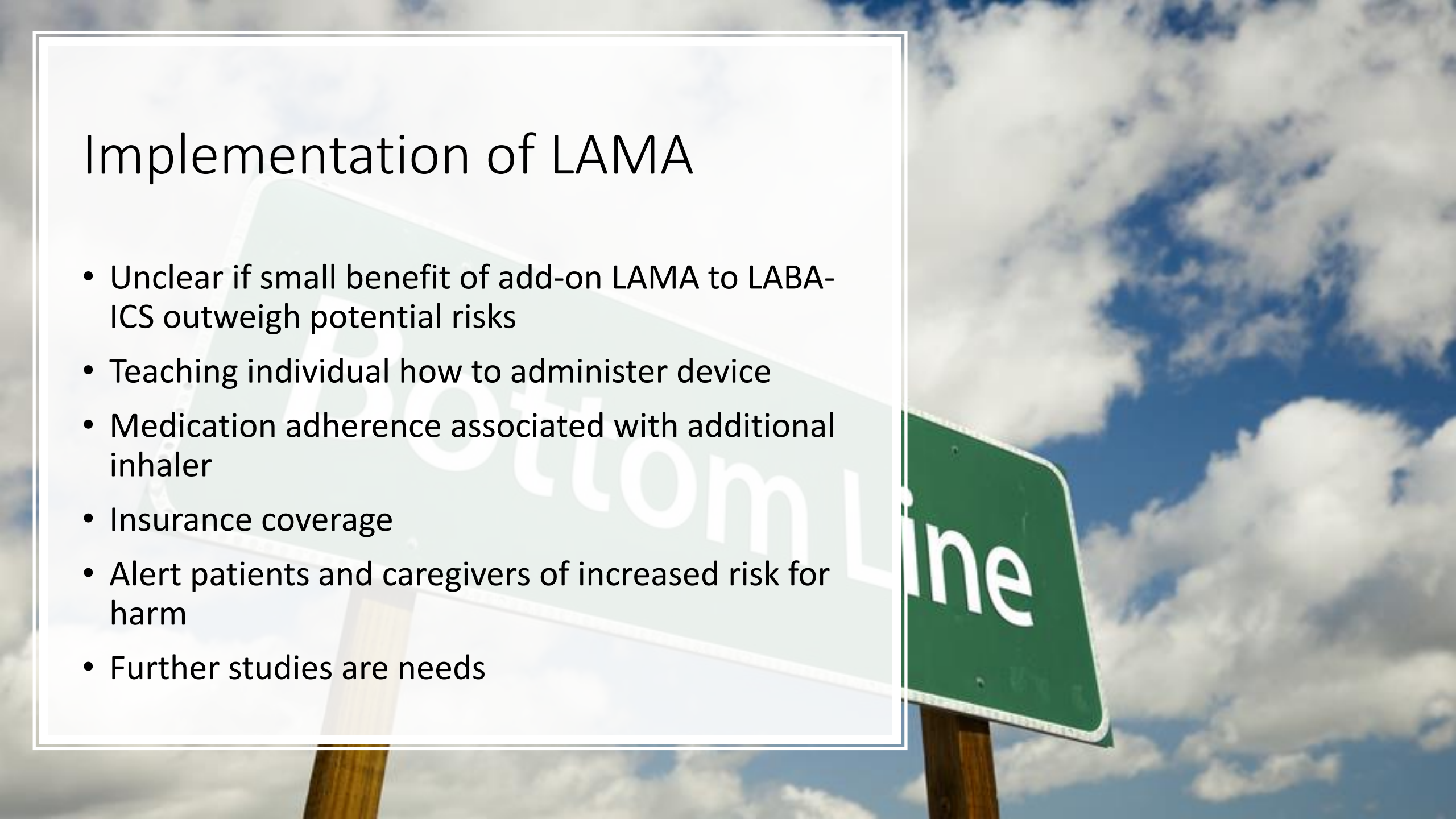
Risks & Drawbacks

- No effect on asthma exacerbations requiring systemic corticosteroids or rescue medications

Kerstjens et al. 2012
Wang et al. 2015

Implementation of LAMA

- Unclear if small benefit of add-on LAMA to LABA-ICS outweigh potential risks
- Teaching individual how to administer device
- Medication adherence associated with additional inhaler
- Insurance coverage
- Alert patients and caregivers of increased risk for harm
- Further studies are needs



Objectives

- Discuss key changes to asthma management in children

- **Examine updated stepwise approach for management of asthma**

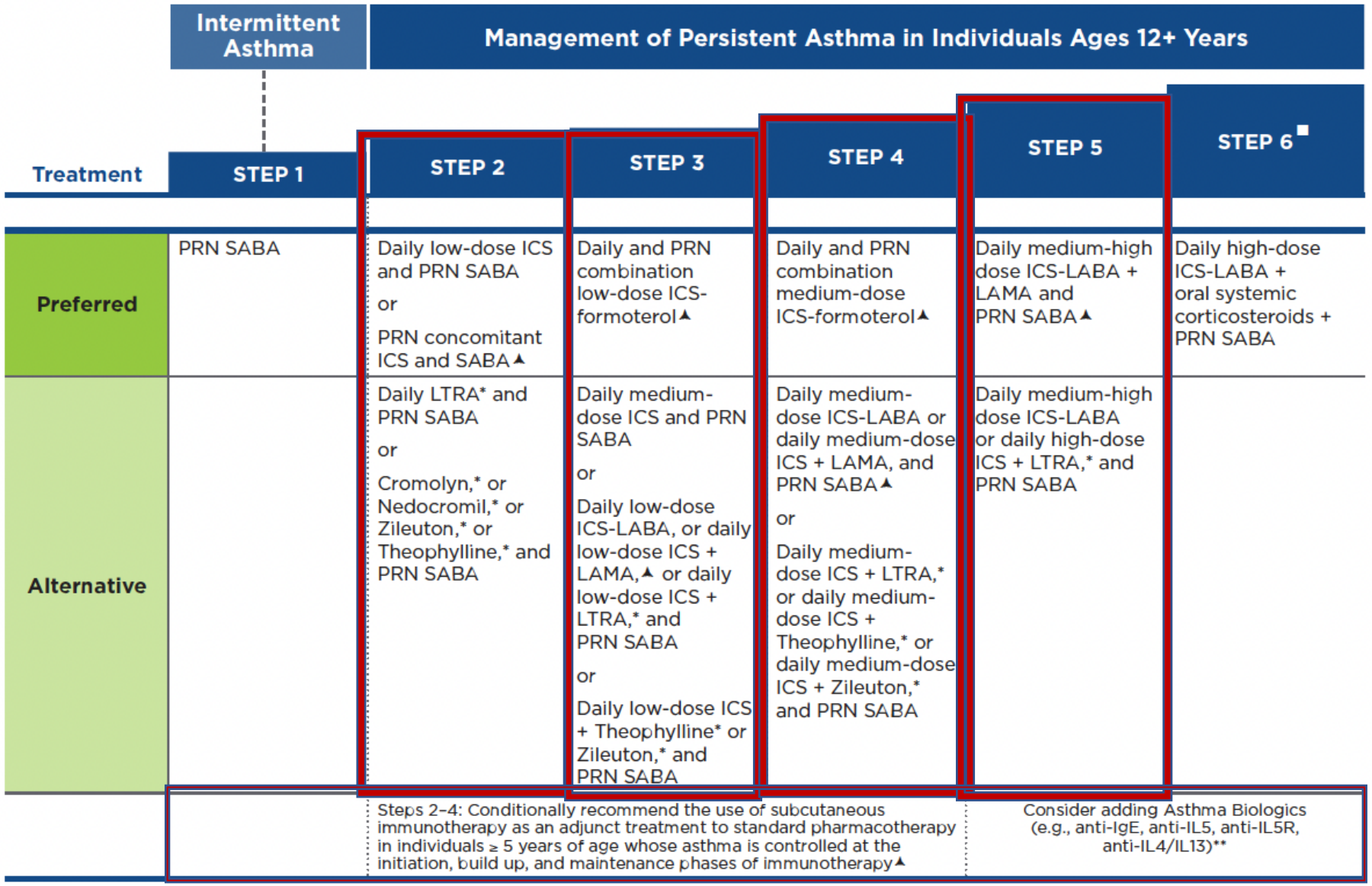
Figure I.b: Stepwise Approach for Management of Asthma in Individuals Ages 0–4 Years

Treatment	Intermittent Asthma	Management of Persistent Asthma in Individuals Ages 0–4 Years				
	STEP 1	STEP 2	STEP 3	STEP 4	STEP 5	STEP 6
Preferred	PRN SABA and At the start of RTI: Add short course daily ICS▲	Daily low-dose ICS and PRN SABA	Daily medium-dose ICS and PRN SABA	Daily medium-dose ICS-LABA and PRN SABA	Daily high-dose ICS-LABA and PRN SABA	Daily high-dose ICS-LABA + oral systemic corticosteroid and PRN SABA
Alternative		Daily montelukast* or Cromolyn,* and PRN SABA		Daily medium-dose ICS + montelukast* and PRN SABA	Daily high-dose ICS + montelukast* and PRN SABA	Daily high-dose ICS + montelukast*+ oral systemic corticosteroid and PRN SABA

Figure I.c: Stepwise Approach for Management of Asthma in Individuals Ages 5–11 Years

	Intermittent Asthma	Management of Persistent Asthma in Individuals Ages 5–11 Years				
Treatment	**STEP 1**	**STEP 2**	**STEP 3**	**STEP 4**	**STEP 5**	**STEP 6**
Preferred	PRN SABA	Daily low-dose ICS and PRN SABA	Daily and PRN combination low-dose ICS-formoterol▲	Daily and PRN combination medium-dose ICS-formoterol▲	Daily high-dose ICS-LABA and PRN SABA	Daily high-dose ICS-LABA + oral systemic corticosteroid and PRN SABA
Alternative		Daily LTRA,* or Cromolyn,* or Nedocromil,* or Theophylline,* and PRN SABA	Daily medium-dose ICS and PRN SABA or Daily low-dose ICS-LABA, or daily low-dose ICS + LTRA,* or daily low-dose ICS +Theophylline,* and PRN SABA	Daily medium-dose ICS-LABA and PRN SABA or Daily medium-dose ICS + LTRA* or daily medium-dose ICS + Theophylline,* and PRN SABA	Daily high-dose ICS + LTRA* or daily high-dose ICS + Theophylline,* and PRN SABA	Daily high-dose ICS + LTRA* + oral systemic corticosteroid or daily high-dose ICS + Theophylline* + oral systemic corticosteroid, and PRN SABA
		Steps 2–4: Conditionally recommend the use of subcutaneous immunotherapy as an adjunct treatment to standard pharmacotherapy in individuals ≥ 5 years of age whose asthma is controlled at the initiation, build up, and maintenance phases of immunotherapy▲			Consider Omalizumab**▲	

Figure I.d: Stepwise Approach for Management of Asthma in Individuals Ages 12 Years and Older



Key take away points

- 0-4 y/o with recurrent wheezing EP conditionally recommended starting a short course of daily ICS at the onset of a RTI with as-needed SABA for quick-relief therapy compared to as-needed SABA for quick-relief therapy only.
- 4 years old or older with moderate to severe persistent asthma Expert Panel recommends **ICS-formoterol** in a single inhaler used as both daily controller and reliever therapy at step 3
- 12 years old or older conditional recommendations **2-4 puffs of albuterol** followed by **80–250 mcg of Beclomethasone(Qvar)** equivalent every 4 hours as needed for asthma symptoms at step 2.
- 12 years old or older with uncontrolled persistent asthma, the Expert Panel conditionally recommends against adding LAMA to ICS compared to adding LABA to ICS at step 5
- 12 years or older with uncontrolled persistent asthma, the Expert Panel conditionally recommends adding LAMA to ICS-LABA compared to continuing the same dose of ICS-LABA.

Thank for your attention

Asthma Updates: Adults

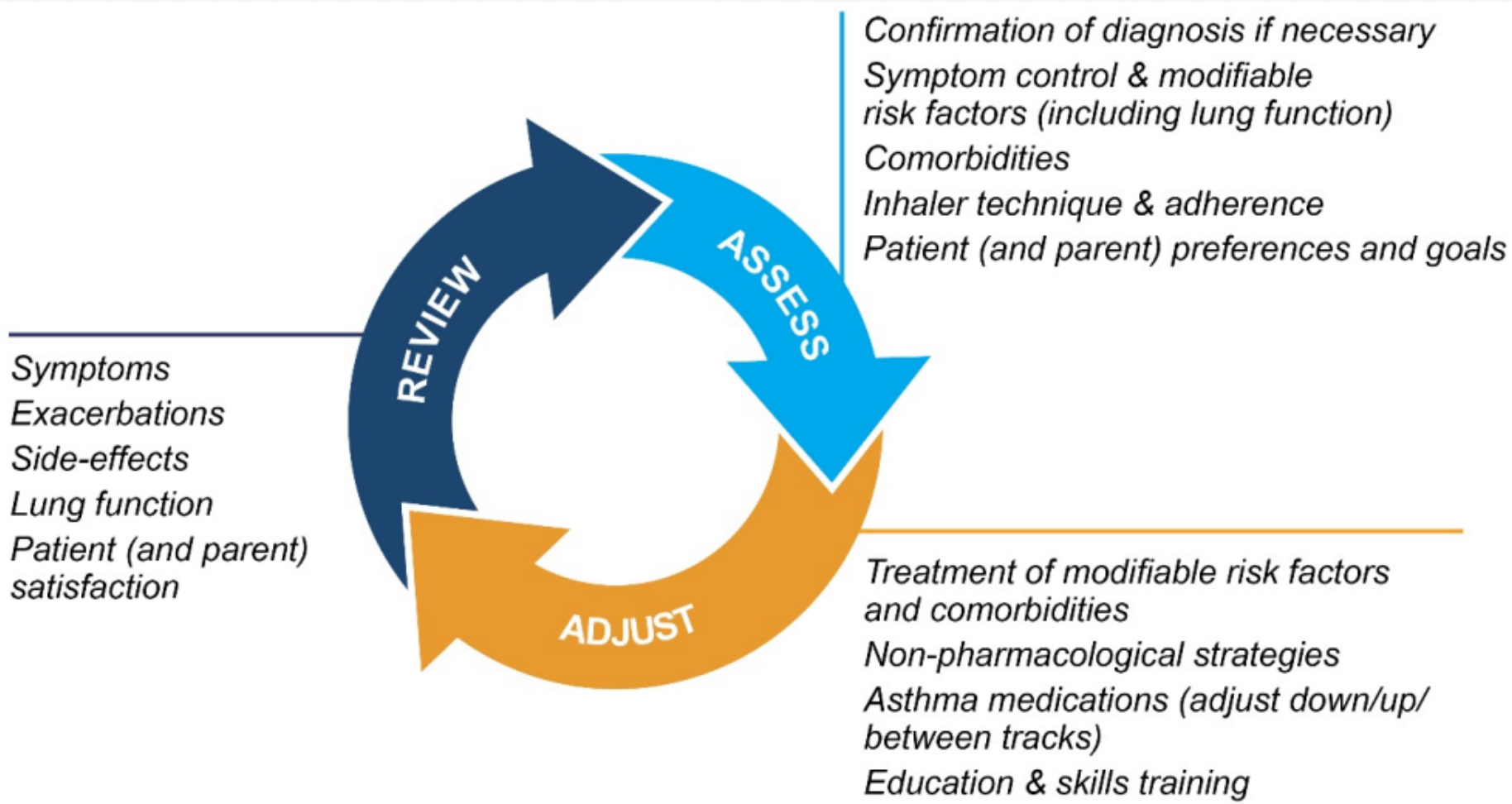
Andrew Foderaro, MD
Assistant Professor in Medicine, Clinician Educator
Division Pulmonary, Critical Care, and Sleep Medicine
Warren Alpert School of Medicine
Brown University

Global Initiative for Asthma (GINA)

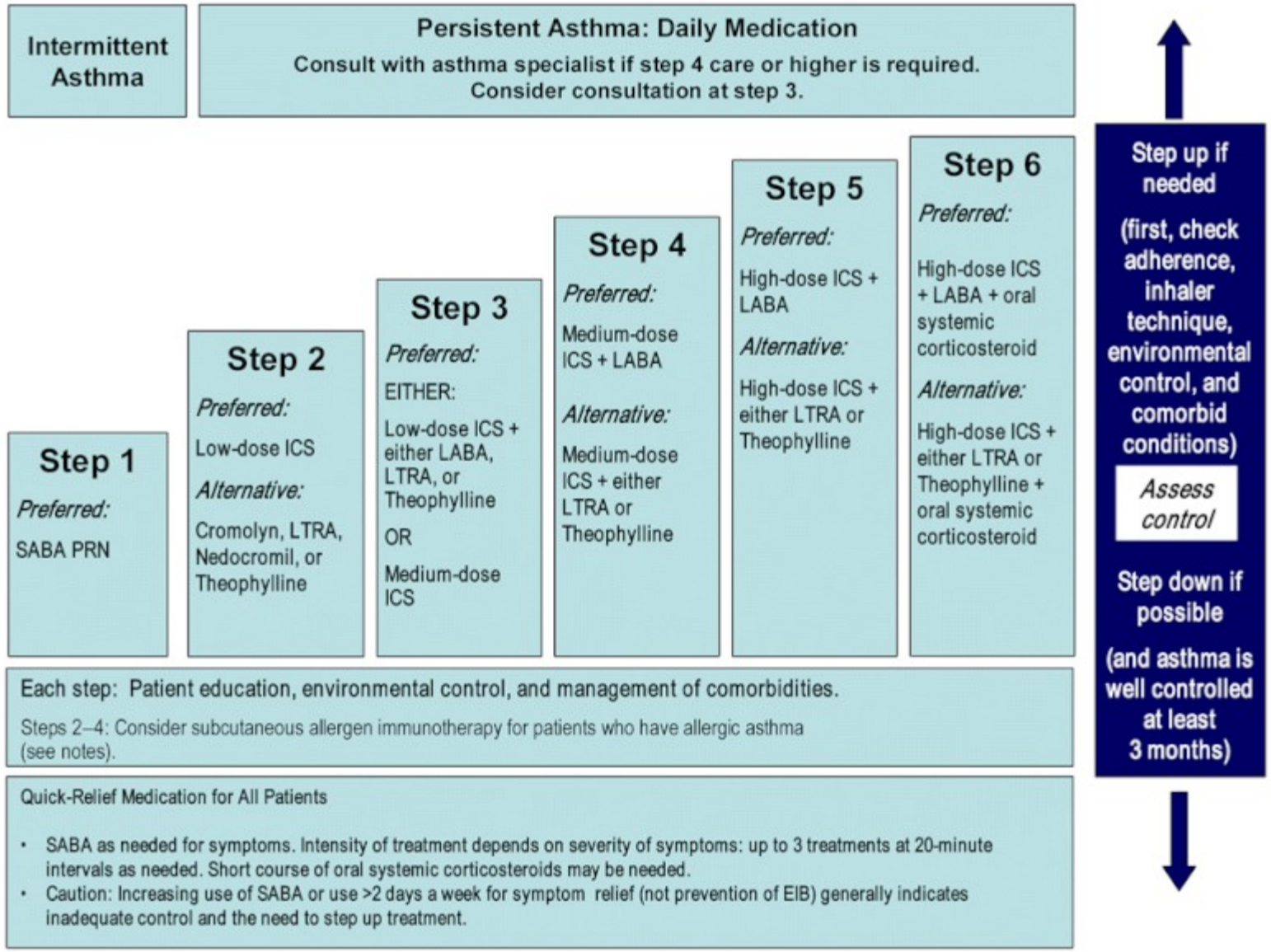
What's new in GINA 2021?

GINA Global Strategy for Asthma Management and Prevention

Personalized asthma management



- NOT just about medications, NOT one-size-fits-all



Key: **Alphabetical order is used when more than one treatment option is listed within either preferred or alternative therapy.** ICS, inhaled corticosteroid; LABA, inhaled long-acting beta$_2$-agonist, LTRA, leukotriene receptor antagonist; SABA, inhaled short-acting beta$_2$-agonist

GINA 2019: a fundamental change in asthma management

Treatment of asthma with short-acting bronchodilators alone is no longer recommended for adults and adolescents

Helen K. Reddel[1], J. Mark FitzGerald[2], Eric D. Bateman[3], Leonard B. Bacharier[4], Allan Becker[5], Guy Brusselle[6], Roland Buhl[7], Alvaro A. Cruz[8], Louise Fleming[9], Hiromasa Inoue[10], Fanny Wai-san Ko[11], Jerry A. Krishnan[12], Mark L. Levy[13], Jiangtao Lin[14], Søren E. Pedersen[15], Aziz Sheikh[16], Arzu Yorgancioglu[17] and Louis-Philippe Boulet[18]

Reddel et al, ERJ 2019

- For safety, GINA no longer recommends SABA-only treatment for Step 1 in adults and adolescents
  - This decision was based on evidence that SABA-only treatment increases the risk of severe exacerbations, and that adding any ICS significantly reduces the risk

- GINA now recommends that all adults and adolescents with asthma should receive ICS-containing controller treatment, to reduce the risk of serious exacerbations

- This is a population-level risk reduction strategy
  - The aim is to reduce the probability of serious adverse outcomes at a population level
  - Individual patients may not necessarily experience (or be aware of) short-term clinical benefit

Background - the risks of ‘mild’ asthma

- Patients with apparently mild asthma are still at risk of serious adverse events
- Exacerbation triggers are unpredictable (viruses, pollens, pollution, poor adherence)
- Inhaled SABA has been first-line treatment for asthma for 50 years
  - Dating from an era when asthma was thought to be a disease of bronchoconstriction
  - Its role has been reinforced by rapid relief of symptoms and low cost
  - Starting treatment with SABA trains the patient to regard it as their primary asthma treatment

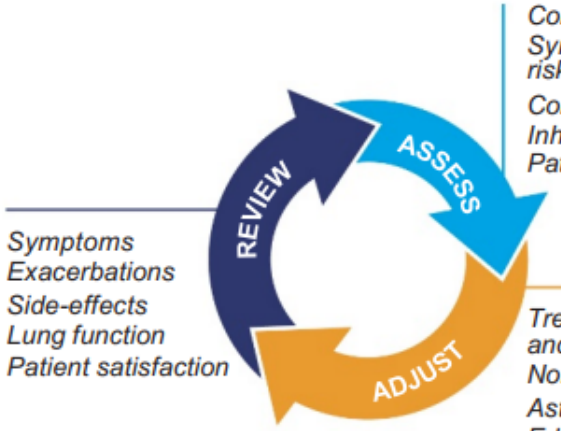
Background - the risks of SABA-only treatment

- Background - the risks of SABA-only treatment n Regular use of SABA, even for 1–2 weeks, is associated with adverse effects
  - b-receptor downregulation,
  - decreased bronchoprotection,
  - rebound hyperresponsiveness,
  - decreased bronchodilator response
  - increased allergic response
  - increased eosinophilic airway inflammation

- Hancox, Respir Med 2000
- Aldridge, AJRCCM 2000

Adults & adolescents 12+ years

Personalized asthma management
Assess, Adjust, Review
for individual patient needs



CONTROLLER and **PREFERRED RELIEVER**
(Track 1). Using ICS-formoterol as reliever reduces the risk of exacerbations compared with using a SABA reliever

STEPS 1 – 2	STEP 3	STEP 4	STEP 5
As-needed low dose ICS-formoterol	Low dose maintenance ICS-formoterol	Medium dose maintenance ICS-formoterol	Add-on LAMA Refer for phenotypic assessment ± anti-IgE, anti-IL5/5R, anti-IL4R Consider high dose ICS-formoterol
RELIEVER: As-needed low-dose ICS-formoterol			

CONTROLLER and **ALTERNATIVE RELIEVER**
(Track 2). Before considering a regimen with SABA reliever, check if the patient is likely to be adherent with daily controller

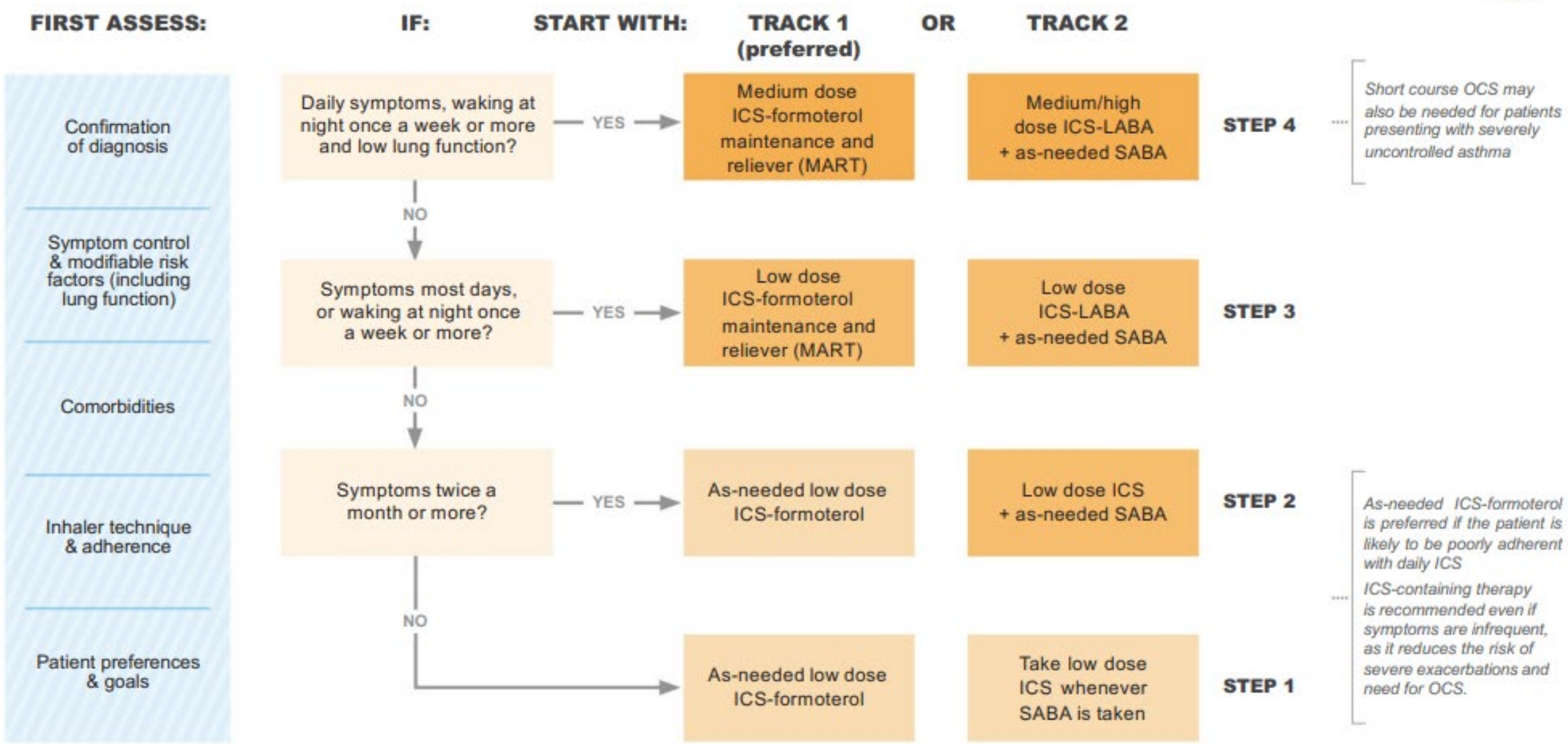
STEP 1	STEP 2	STEP 3	STEP 4	STEP 5
Take ICS whenever SABA taken	Low dose maintenance ICS	Low dose maintenance ICS-LABA	Medium/high dose maintenance ICS-LABA	Add-on LAMA Refer for phenotypic assessment ± anti-IgE, anti-IL5/5R, anti-IL4R Consider high dose ICS-LABA
RELIEVER: As-needed short-acting β2-agonist				

Other controller options for either track

	Low dose ICS whenever SABA taken, or daily LTRA, or add HDM SLIT	*Medium dose ICS, or add LTRA, or add HDM SLIT*	*Add LAMA or LTRA or HDM SLIT, or switch to high dose ICS*	*Add azithromycin (adults) or LTRA; add low dose OCS but consider side-effects*

STARTING TREATMENT

in adults and adolescents 12+ years with a diagnosis of asthma



Other therapies for advanced asthma

- Add-on azithromycin three days a week has been confirmed as an option for consideration after specialist referral
  - Significantly reduces exacerbations in patients taking high dose ICS-LABA
  - Significantly reduces exacerbations in patients with eosinophilic or non-eosinophilic asthma
  - No specific evidence published for azithromycin in patients taking medium dose ICS-LABA
- Before considering add-on azithromycin
  - Check sputum for atypical mycobacteria
  - Check ECG for long QTc (and re-check after a month of treatment)
  - Consider the risk of increasing antimicrobial resistance (population or personal)

Hiles et al, ERJ 2019

Other therapies for advanced asthma

- Biologic therapy – generally with specialty referral
  - Check (or recheck) blood eosinophils and IgE

- Additional indications for these therapies
  - Omalizumab (monoclonal antibody [MAB] for IgE): chronic idiopathic urticaria, nasal polyposis
  - Mepolizumab (MAB for IL-5): hypereosinophilic syndrome, eosinophilic granulomatosis with polyangiitis (EGPA)
  - Benralizumab (MAB for IL-5): no additional indications at present
  - Dupilumab (MAB for IL-4 and IL-13): chronic rhinosinusitis with nasal polyposis; atopic dermatitis

Asthma and COVID

- Are people with asthma at increased risk of COVID-19, or severe COVID-19?
  - People with asthma do not appear to be at increased risk of acquiring COVID-19, and systematic reviews have not shown an increased risk of severe COVID-19 in people with well-controlled, mild-to-moderate asthma

Asthma and COVID

- Are people with asthma at increased risk of COVID-19-related death?
  - Overall, people with well-controlled asthma are not at increased risk of COVID-19-related death
  - However risk of COVID-19 death was increased in people who had recently needed oral corticosteroids (OCS) for their asthma and in hospitalized patients with severe asthma

- Williamson, Nature 2020;
- Liu et al, Journal of Allergy and Clinical Immunology, 2021
- Bloom, Lancet Respiratory Med, 2021

Asthma and COVID

- Management
  - Continue current therapies including inhalers and biologics
  - Possibly avoid nebulizers in communal settings to help avoid spread
  - Vaccination – YES
    - Expert opinion recommendation to avoid vaccination and biologic on same day to better help distinguish and adverse event

Future Directions in Asthma

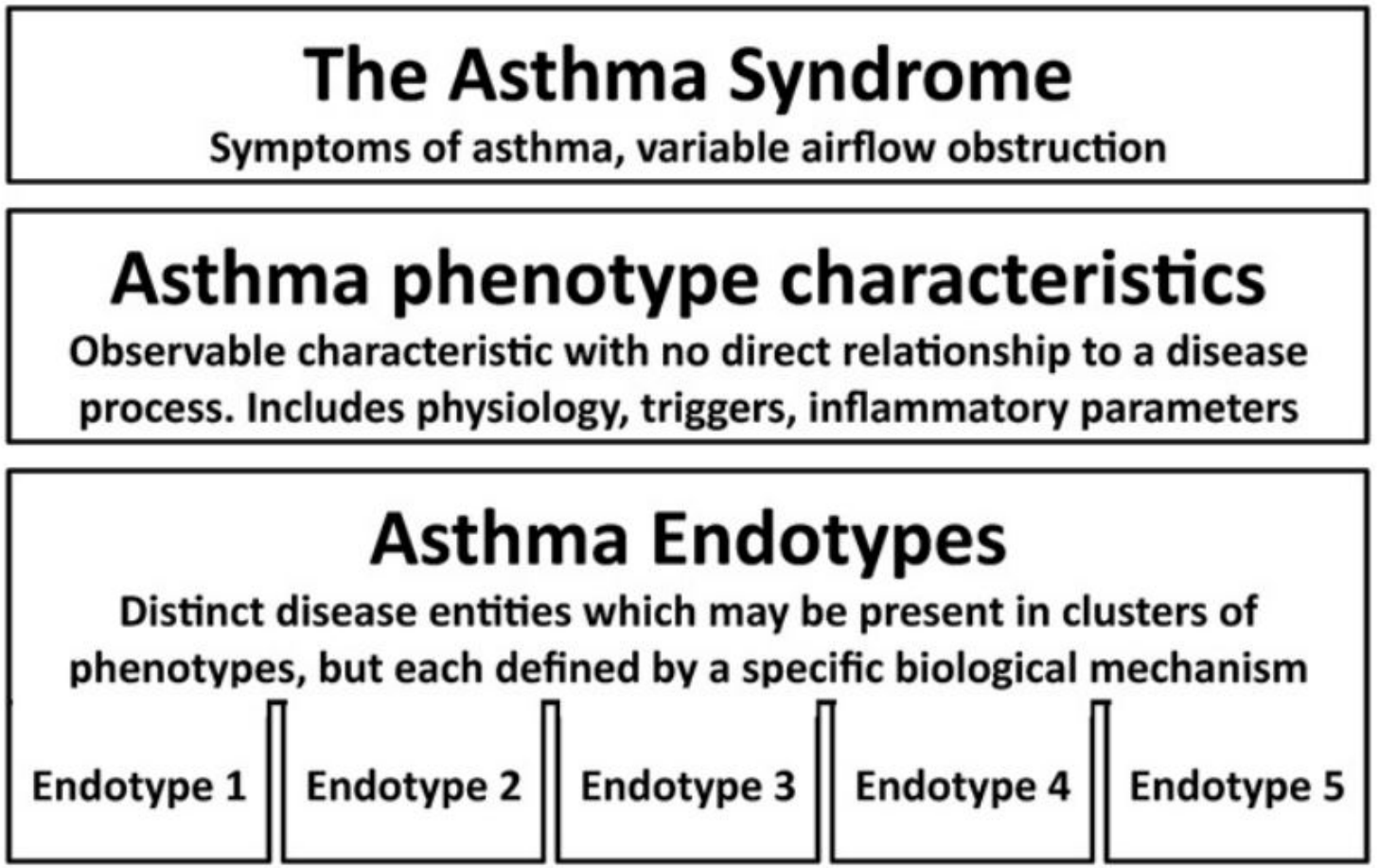


FIG 1. Asthma is made up of different endotypes, each characterized by its pathophysiology.

Lötvall, Jan, et al. *Journal of Allergy and Clinical Immunology,* (2011)

TABLE II. Examples of endotypes that fulfill at least 5 of 7 prespecified disease characteristics

Endotype of the asthma syndrome	Disease characteristics							
	Clinical characteristics	Biomarkers	Lung physiology	Genetics	Histopathology	Epidemiology	Treatment response	Proposed mechanism
Proposed endotype	History, physical examination, comorbidities	Eosinophilia, FeNO, SPT, IgE	BHR, FEV_1, reversibility	SNPs and pathways	Tissue/lung characteristics	Prevalence, risk factors, and natural history	Response or lack of response to a specific treatment	Specific biological pathway or process
Aspirin-sensitive asthma	Polyposis, often more severe asthma	Often eosinophilic, increased urinary LTs	Response to aspirin challenge	LT-related gene polymorphisms	Often eosinophilic	Adult onset, severe disease poor prognosis, prevalence 2% to 5%	Responds to anti-LT, especially 5-LO inhibitors	Likely eicosanoids-related
ABPM	Severe, mucus production, adult/long disease duration	Blood eosinophilia, markedly elevated IgE and specific IgE	Less reversible/fixed airflow obstruction	HLA and rare CF variants	Bronchiectasis/ eosinophils and PMNs, bronchocentric granulomatosis	Long duration/ adult onset/poor prognosis	Glucocorticoids, antifungals, possibly omalizumab	Colonization of airways
Allergic asthma (adults)	Allergen associated symptoms/allergic rhinitis	Positive SPT, elevated IgE/ elevated FeNO	Specific allergic bronchospasm	T_H2 pathway SNPs	Eosinophils, SBM thickening	Childhood onset, history of eczema	Responds to glucocorticoids and omalizumab, possible IL-4/13 pathway inhibition	T_H2-dominant
API-positive preschool wheezer	>3 episodes per year, 1 major or 2 minor characteristics	Often >4% eosinophils in blood (minor), aeroallergen-specific IgE	Potential increased risk of loss of lung function	Unknown	Unknown	Mother or father with asthma	Responds well to daily inhaled glucocorticoids	T_H2-dominant
Severe late-onset hypereosinophilic	Severe exacerbations, late-onset disease	Peripheral blood eosinophilia	Bronchodilator-resistant, episodic fall in lung function, steroid-sensitive	No evidence	High blood eosinophil count and eosinophils in tissue	Approximately 20% of severe asthma populations	Glucocorticoid-sensitive, often oral steroid-dependent, responds to anti-IL-5	Nonatopic, otherwise unknown
Asthma in cross-country skiers	Mild to moderate severity, symptoms mostly related to exercise, URTI commonly reported	FeNO normal, normal blood eosinophil count, increased LTE_4 in urine	Methacholine and or exercise positive, usually negative to mannitol or AMP challenge	Unknown	SBM thickening with low-grade noneosinophilic inflammation, increased neutrophils in sputum related to training intensity or duration, BALT in airway mucosa	15% to 25% of elite skiers, highest prevalence among those training in a cold, dry environment	Responds poorly to inhaled glucocorticoid treatment, improves when training intensity diminishes	Cold, dry air induces chronic stress to the airways, subclinical viral infections?

Lötvall, Jan, et al. *Journal of Allergy and Clinical Immunology,* (2011)

References

- Lötvall, Jan, et al. "Asthma endotypes: a new approach to classification of disease entities within the asthma syndrome." *Journal of Allergy and Clinical Immunology* 127.2 (2011): 355-360.
- Williamson, Elizabeth J., et al. "Factors associated with COVID-19-related death using OpenSAFELY." *Nature* 584.7821 (2020): 430-436.
- Liu, Shuang, et al. "Prevalence of comorbid asthma and related outcomes in COVID-19: a systematic review and meta-analysis." *The Journal of Allergy and Clinical Immunology: In Practice* 9.2 (2021): 693-701.
- Bloom, C., et al. "Risk of adverse outcomes in patients with underlying respiratory conditions hospitalised with COVID-19 using the ISARIC WHO clinical characterisation protocol: a national, multicentre prospective cohort." *Lancet Respir Med* 9.7 (2021): 699-711.
- Hiles, Sarah A., et al. "Does maintenance azithromycin reduce asthma exacerbations? An individual participant data meta-analysis." *European Respiratory Journal* 54.5 (2019).
- Hancox, R. J., et al. "Bronchodilator tolerance and rebound bronchoconstriction during regular inhaled β-agonist treatment." *Respiratory medicine* 94.8 (2000): 767-771.
- ALDRIDGE, RUTH E., et al. "Effects of terbutaline and budesonide on sputum cells and bronchial hyperresponsiveness in asthma." *American journal of respiratory and critical care medicine* 161.5 (2000): 1459-1464.
- Reddel, Helen K., et al. "GINA 2019: a fundamental change in asthma management: treatment of asthma with short-acting bronchodilators alone is no longer recommended for adults and adolescents." *European Respiratory Journal* 53.6 (2019).

Asthma

Gayle Dichter

Neighborhood Health Plan OF RHODE ISLAND™

NHPRI Compared to RI

- In 2019 ecoRI news indicated the incidence of Asthma in RI was 10.9%
- In 2021, 9% of NHPRI's population had an asthma diagnosis

Neighborhood Health Plan OF RHODE ISLAND™

Asthma Population for NHPRI 2021

- 19,600 with a diagnosis of asthma
  - 5,917 Mild Intermittent
  - 2,498 Mild Persistent
  - 2,816 Moderate Persistent
  - 477 Severe Persistent
- 32% Less than 18 Years Old

Neighborhood Health Plan OF RHODE ISLAND™

Asthma at NHPRI

- Asthma population increased by 11.6% in 2020
- Inpatient stays for asthma decreased by 39% in 2020
- Emergency room visits for asthma decreased by 44% in 2020
- Number of members with at least two outpatient visits for asthma increased by 9% in 2020

* Note COVID in 2020

Neighborhood Health Plan OF RHODE ISLAND™

Breathe Easy – Asthma Management

Goals

- Improve the rates for all HEDIS asthma performance measures by one percentage point.
- Decrease utilization for ER visits/1,000 for asthma exacerbations by 1% for all members.
- Decrease inpatient admissions/1,000 for asthma exacerbations by 1% for all members.
- Increase the percentage of persistent asthmatic members that are appropriately managing their asthma through regular outpatient visits for asthma management (at least two visits per year) by 1%.

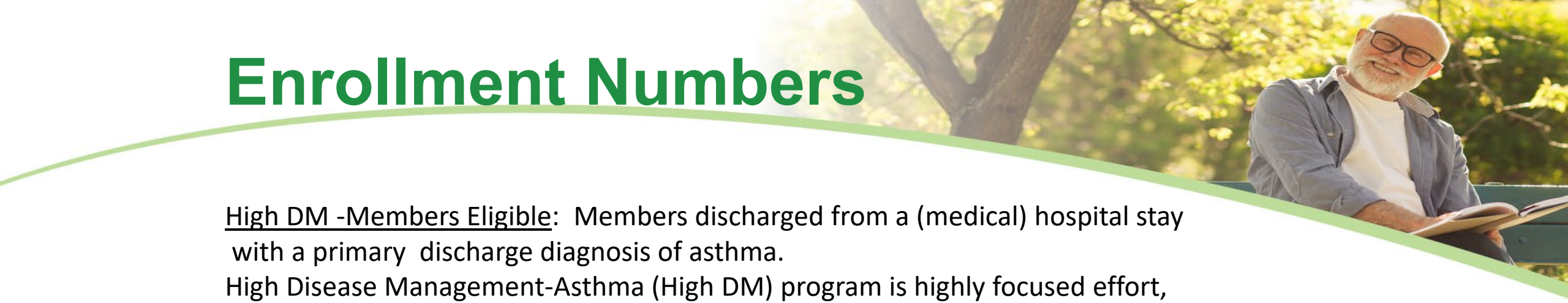
Neighborhood Health Plan OF RHODE ISLAND™

Asthma Program Enrollment

- Passive enrollment/ Opt Out (no Opt Outs in 2020)
- Identification through claims & diagnoses & referrals
- All – welcome Packet and quarterly educational mailings
- High Risk –following inpatient stay for Asthma; home visit and telephonic support

Neighborhood Health Plan OF RHODE ISLAND™

Enrollment Numbers



High DM -Members Eligible: Members discharged from a (medical) hospital stay with a primary discharge diagnosis of asthma.
High Disease Management-Asthma (High DM) program is highly focused effort, working specifically with members coming out of the hospital after an admission with a primary diagnosis of asthma. The pool of active members is fairly small.

Year	Member's Participation (Numerator)	Enrolled Members (Denominator)	Participation Rate	Triggered for High DM	Enrolled in High DM	High DM Participation Rate
2018	10,945	10,944	99.99%	119	27	22%
2019	10,776	10,776	100%	133	55	41%
2020	12,027	12, 027	100%	71	37	52%

Neighborhood Health Plan OF RHODE ISLAND™

Pharmacy Intervention to Improve Medication Use

Measure	Current Interventions	Status
Asthma Medication Ratio	Telephonic Member Outreach Targeting all Members on a Controller Medication who were Identified as having an Asthma Medication Ratio of <0.50	Ongoing
	Telephonic prescriber outreach for members who have filled >8 fills of a reliever medication without any fills of a controller medication	Ongoing

No program results yet.

Neighborhood Health Plan OF RHODE ISLAND™

Pharmacy Interventions

Intervention	Q2 2020	Q3 2020	Q4 2020	Q1 2021	Q2 2021	Q3 2021
AMR (Asthma Related Measures)						
Total Number of Members Identified	139	463	396		286	
Total Call Attempts (3 attempts occur per member)	303	1036	953	234	57	624
Number of Members Reached	79	191	181	39	17	110
Number of Unreached Attempts	224	845	772	195	40	514
Pharmacy Calls	27	47	73	5	5	32
Prescriber Calls	46	28	123	62	6	25

Neighborhood Health Plan OF RHODE ISLAND™

Questions?

Neighborhood Health Plan OF RHODE ISLAND™

Contact Information

Gayle Dichter R.Ph., MBA
VP Integrated Care Strategies
gdichter@nhpri.org

Neighborhood Health Plan OF RHODE ISLAND™

Next Meeting

In lieu of March 4th, 12-1PM planning meeting…

March 11, 2021; 7:30-9:00AM – Breakfast of Champions

Featuring some innovative work that is going on in RI around improving asthma outcomes

You will receive a calendar invite and need to register for this meeting.

https://www.eventbrite.com/e/march-11-2022-ctc-ri-quarterly-breakfast-of-champions-tickets-267057485127?aff=Meeting

This meeting is *approved for* 1.5 *AAFP* pr*escribed credits.*

Going forward

Planning meeting are 1st Friday of month, 12-1PM

Move meetings from 12 – 1 to 11:30-12:30?

CARE TRANSFORMATION COLLABORATIVE RHODE ISLAND

pcmh kids patient-centered medical home

ADVANCING INTEGRATED HEALTHCARE

Stay Safe and Healthy